



## Thorn brings its buys together

by Robert Parry  
THORN-EMI last week brought the bulk of its newly acquired computer interests in house. It merged its internal computer operation, Corporate Management Services (CMS), with the Data-solve bureau, bought with Software Sciences from BOC a year ago.

CMS becomes an operational division of Data-solve, moving into Thorn-EMI's information technology division, formed at the end of November by combining Software Sciences, Data-solve and Thorn-EMI Data-tech. The division is headed by Software Sciences' founder Colin Southgate.

"Data-solve has convinced Thorn-EMI that we are competent," says Data-solve managing director Chris Wood, "and in effect we finish up with the internal Thorn-EMI computing. It doubles the size of our operation."

CMS employs around 450 people. CMS is the primary computer management team within Thorn-EMI, and looks after the group's internal computing requirements from two primary centres at Westmount, Hayes, and Hoddeston in Hertfordshire. Westmount is a Honeywell house and Hoddeston mixed IBM and ICL, though the ICL 2956 there is about to be phased out in favour of another IBM machine, says Wood.

Three other centres, at Spenny-moor, Co Durham, Telford and Havant, Hampshire, make up the rest of CMS facilities. Telford presently has an ICL 2900, which will shortly move over to IBM 4341 like the other centres. "It will be six to 12 months till the final phase of ICL kit," adds Wood.

The advantages for CMS of the combination with Data-solve lie mainly in the extra IBM support experience and geographical spread. The Data-solve centre at Sunbury, purely IBM or plug compatible machines, is ideal for a disaster standby and backup.

The move also opens up opportunities to move some of CMS's skills to the external market, particularly its manufacturing systems experience. These will now be available to third parties through the Data-solve bureau. This extension of Data-solve's repertoire and effective expansion of the facilities it can call on are the main benefits.

"But it also gives us an entrée into Thorn-EMI for our services," adds Wood, "where we can offer something different from its present internal ones."

John Gaffney, who was head of CMS, moves on to the Data-solve team, retaining responsibility for the CMS operation.



WOOD... convinced Thorn his company is competent.

## Four from Hitachi go in lawsuit drama

by John Kavanagh  
TWO top executives and two engineers at Hitachi have become the first casualties of IBM's trade secrets lawsuit against the Japanese company.

With settlement of the case due this weekend, computer operations director, Yasukichi Hatake, has been removed from the job, although he remains a company director.

And mainframe factory manager Kikaburo Nakazawa has been transferred to the general corporate staff.

Two engineers arrested by FBI agents in the US have been moved from the mainframe business to the personal computer factory in Japan.

These moves came six weeks after Hitachi was fined the maximum of \$10,000 after pleading guilty to conspiring to steal confidential design information from IBM on new products - the 3080 mainframe and the MVS/370 operating system.

The suit due for settlement this week is a civil action brought by IBM against Hitachi, the US firm which sells its plug-compatible systems - NAS - and NAS parent company, National Semiconductor.

Hitachi pleaded guilty in the first case in exchange for assurances from the US Justice Department that no further charges would be brought in the case.

The plug-compatible company admitted paying over \$300,000 for IBM documents but said it did not know they were stolen.

## BT gets EEC cash - but Howe snatches it

by Donald Kennett  
OVER £200 million of the EEC refund won by Prime Minister Margaret Thatcher's protests over the UK's oversized contribution was allocated to telecommunications.

The bulk of the money, 90% of a total refund of £631 million, reached the Treasury last week.

But British Telecom will see little benefit from it, since Chancellor Sir Geoffrey Howe said in last month's UK budget that BT would have its borrowing limit reduced by £196 million.

Instead of being able to borrow an additional £96 million this year, it will have to pay back £100 million of the £3 billion it already has on loan.

A spokesman for the Treasury said that the expectation of receiving the refund had already been taken into account when the expenditure plans for 1982-83 were drawn up and that the transfer of the funds from the EEC merely reimbursed the Treasury for money already spent.

An EEC spokesman said that telecommunications was one of the main areas in which the Commission wanted to encourage investment, but that so far no specific method had been established for doing it.

Meanwhile, the "supplementary measures" under which the refund were made was a useful channel.

The sums provided in this way were far larger than those provided under other schemes, the regional development fund, for example.

IBT is privatised it will cease to qualify for this type of funding, but the Treasury says it will no longer need it then because it will be free of all constraints on borrowing except the willingness of the lenders and its own ability to repay.

## Rivals' wrangling mars Seiko's 16-bit launch

by Robert Parry  
WRANGLING between rival distributors looks set to mar the European launch of an advanced Japanese 16-bit microcomputer. The Seiko Series 8600 is due to be shown at the Hannover Fair next week by Japanese trading company Marubeni, only a few weeks before the machine's US distributor and design partner Sci-Com Computer Systems moves into its first European market, the UK.

"Marubeni plans to demonstrate the machine with software that is not theirs," claims Sci-Com's president Doug Davidson. "If they run our software, we will take legal action."

The main contention is over operating systems developed by Sci-Com's majority stock holder, Science Management Corporation (SMC) based in New Jersey.

According to Colin Turney, a marketing consultant to Marubeni in London, Marubeni has licenses from SMC via Seikoshu, the manufacturer of the hardware.

"They have no software whatsoever," counters Davidson. "Sci-Com and SMC have never been contacted by Marubeni. The software mentioned is the property of SMC and Sci-Com, not Seikoshu."

Davidson is executive vice president of SMC, as well as president of Sci-Com and on the board of its UK distributor Synchronised Computers.

There seems little likelihood of Sci-Com pulling out. Synchronised Computers was founded by John Clarke, formerly go-between for manufacturers and dealers through his Dealer Deals company, with £500,000 initial backing and strong support from Sci-Com. "If we do well we will need another £200,000 in nine months or so," says Clarke. "You need that to do things properly. Selling is not just waiting for people to come in and ask for one, you have to create a market."



CLARKE... creating markets.

## LINE NOISE

PERSISTENT rumours have been doing the rounds that mini maker GEC Computers is out to buy in a micro to sell under its own label. US manufacturer Tandy has featured strongly as a likely supplier, with its 68000-based Model 16. But according to a GEC spokesman, the talk started when Tandy offered to buy a GEC mini if GEC would take some Tandy micros in exchange. Anyway, he adds, a GEC subsidiary company, A B Dick in the US, is developing products for GEC Information Systems (the company that makes GEC Computers) - so there would be no need to go to Tandy or any other outside microcomputer builder.

THE young but fast-growing UK microcomputer manufacturer Future Technology Systems is about to hit the big time in the OEM market. The company moved into that business last year with an order from an office equipment firm called OEM but it is now getting a big order from a "very large computer manufacturer" to build systems and make them look just like that company's equipment, right down to the cabinets.

A NICH project is coming up for an update and improvement in British Telecom's public payphones. Instead of taking money these public telephones accept plastic cards which you buy in post offices and newsagents. These devices take BT the cost of employing the cash boxes. But BT payphones even further and send the charges straight through to the user's domestic telephone bill. This would involve links between billing computers and the new System X digital network.

AN IBM plug-compatible mainframe running an ICL operating system? Don't be surprised if ICL announces a version of its VME operating system for the Fujitsu-built Adina range. It's about time IBM users had an operating system worthy of the name, and it looks as if VME could be it.

## Hybrid mail is on the way

by Howard Kerton  
THE Trans-Canada telephone system and the Canada Post Corporation last week began an introductory test of the first hybrid electronic mail system combining standard electronic mail and standard postal delivery of hard copy messages. Envoypost, charging users as little as \$2 for a message, will initially serve 20 major Canadian cities.

It is an extension of the Envoy 100 electronic mail system already in commercial service, and appears similar to Bion, a hybrid service set up by the US Postal Service last year. That service, which has more restrictions than Envoypost, is reported to have failed to meet US Postal Service volume and revenue targets.

Like Bion, Envoypost allows subscribers to transmit messages from terminals in their offices, which are then sent to the post office as part of the regular mail. Messages are then printed on standard-quality paper and inserted into conventional post boxes for next-day delivery. The messages can be a maximum of 200 lines.

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## Planning Research goes solo

THE 40-strong UK arm of US-based Planning Research Corporation is going it alone following the split between five directors of the subsidiary and PRC. Systems and sister company Martin Workless Associates are now owned by their directors following the sale over of an undisclosed sum of money.

The two companies, now known as MVA Systematics and MVA Associates, specialise in transport, urban planning and surveying packages and operate from London and Hong Kong.

## Mercury link-up

THORN-EMI and Mercury Communications have signed an agreement to cooperate closely on developing nationwide links between cable television networks.

The links are intended to enable independent local networks to take full advantage of the possibilities of service functions other than entertainment television.

## Loss-maker Inmos loses another £20m

by Kevin Cahill  
STATE-OWNED semiconductor manufacturer Inmos lost £20.4 million on sales of £13.7 million in the year ended December 31, 1982.

Chairman Malcolm Wilcox said this week that Inmos could move into profits in 1984, but his claim was qualified by two big "ifs".

"If there is real progress out of the world recession, and sales of Inmos products remain in line with our forecasts."

Last year's loss followed a £12.9 million loss in 1981. In the four years the company has been operational it has shown a cumulative deficit of £42.06 million.

Cash in the bank at the end of 1982 was £3.4 million, enough for eight weeks operations at the rate of loss the company was incurring last year. Wilcox said sales in the first quarter of 1983 were about £5 million, compared to £2.1 million for all of 1981. Cost of sales in 1982 was £16.5 million, which made the trading loss a relatively small £2.7 million.

The remainder of the £20 million loss was made up from an £8.6 million loss on distribution and administration, £4.5 million on R & D, and £3.6 million starting up the factory at Newport in Wales.

Wilcox noted that the company now had almost 300 employees in the UK with prospects for a further 200 or 300 jobs here this year.

This compares with almost 700 jobs at the other Inmos factory in Colorado Springs in the US.

The year end accounts show that Paul Schroeder, a founding director of Inmos, who resigned a year ago, was paid £250,000 compensation and retains a stake in the company. Ian Barron and Richard Petritz are the other two founders.

With sales still relatively slow for the kind of situation Inmos is in, the company has also announced that it will act as a second source for some of Fujitsu's advanced memory chip products.

Managing director, Richard Petritz, said that the company was now marketing in Japan, the US and in Europe with over 200 customers signed up for the 'transputer', which Petritz claims is the microprocessor for the fifth generation of computer systems.

Petritz also spoke of the new 64K EEPROM non-volatile memory which Inmos would be introducing during 1983, to give the company a stake in the non-volatile as well as the static RAM market.

The British Technology Group lent Inmos £15 million in January, and the company intends to convert this loan to equity (shares) as soon as possible. No reason has been given for the delay in converting the loan, but informally the company has indicated that an agreed valuation of Inmos shares has not been arrived at yet.

As announced last autumn, Inmos is continuing the hunt, under the guidance of City of London merchant bank Hill Samuel, for private investors, so far without avail.



BARRON, PETRITZ and SCHROEDER... Will Inmos make them happy?

## IBM software leaves users cold

by Claire Gooding  
IBM's large-scale operating system for the future went on general release last week - leaving the majority of users out in the cold.

Industry observers are saying that customer demand forced IBM to release MVS/XA before it was really ready, without the full facilities which users were led to expect. Still to come is the 4300 DDM/VSE to MVS/XA path which will bring mid-range users into-line.

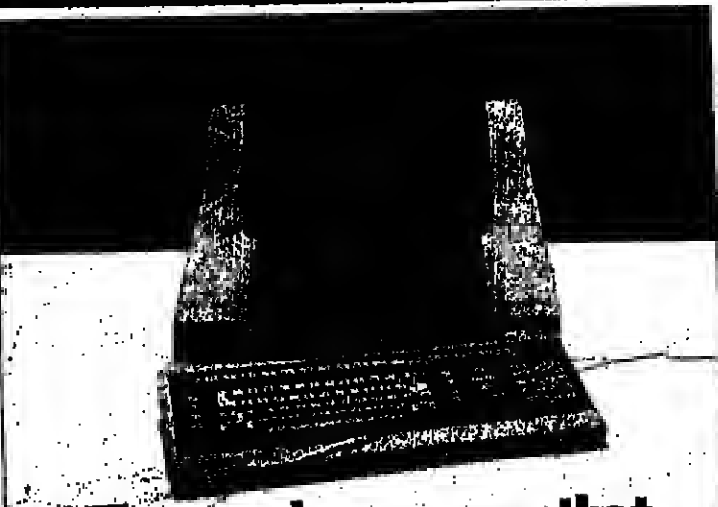
The XA (short for Extended Architecture) extensions were promised some 18 months ago and have been running under an early support program with six customers in 10 sites. Although the clients, mostly big names like McDonnell-Douglas, have not experienced as many problems as they expected in running their applications with XA, the absence of the promised conversion aid is a likely headache for sites with operating systems less up-to-date than MVS/SP1.3.

One complaint from test sites was that MVS/XA has to be run standalone, and that means half an hour out of service while microcode is loaded for XA, and another half-hour to reverse the operation. At \$2,000 an hour in running costs for a 3081 that comes expensive. Installation itself was reported to be straightforward for users of the most recent MVS release SP1.3.3, though likely to be much trickier for those running earlier versions of MVS.

The main reason that large users need MVS/XA in a hurry is to release a vital 14Mbytes in the user area of the machine by moving code out of the Common System Areas. This has become overloaded as expanding systems are Continued on back page

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## ICL on target with new chips

by John Kavanagh  
ICL is on target with its next generation of computers and new very large scale integration chips are working in prototypes of the DMI and Estrel, due for launch late next year. The DMI is the distributed mainframe replacement for the low-end ME29, while the Estrel will fit above ICL's current biggest machine, the 2988.

Chairman Sir Christopher Laidlaw said last week that ICL's collaboration with the Japanese manufacturer Fujitsu was "progressing as planned". He was speaking last week at the formal opening of the company's mainframe development centre at West Gorton in Manchester.

The West Gorton centre has designed what ICL calls "the largest uncommitted logic chips in the world", meaning they are the most densely packed. Each chip is the equivalent of six circuit boards in a current 2900 mainframe.

The chips are being made by Fujitsu. At present ICL designs are sent to Japan but soon they could just travel across the West Gorton car park. Fujitsu has bought ICL's small chip-making plant on the West Gorton site.

## SPL to lead fifth generation forum

by Kevin Cahill

LONDON-based systems house SPL will launch a major new fifth generation push. Called SPL Insight, the overall aim is to create a UK-based organisation which will enable companies in this country to monitor and participate in the development leading to the creation of what the Japanese have described as the fifth generation computer system.

Although the concept and much of the work which will lead to the creation of the new machines for the 1990s is Japanese, so far that country has offered opportunities for international participation.

Up to now, the response to the Japanese offer has been subdued and low profile, partly because of confusion about the form that participation will actually take.

Bob Muller, who will lead the SPL insight team, has worked directly with the Japanese to deliver a forum for collaboration, monitoring and learning from the fifth generation project.

The SPL insight group will consist of no more than 20 organisations, who will each pay a subscription fee of £7,000 per year to obtain full participation in the extensive programme of visits, seminars, international conferences, master classes and tours arranged by SPL insight.

Although the SPL insight group is confined in both its membership and management to European and Nordic countries, Professor Hideo Aiso, chairman of the Japanese Fifth Generation Architecture Group, was an active participant in setting up the SPL group.

He told Muller that he believed that the SPL project would make a great contribution to future information technology.

More importantly, he helped Muller set up the insight world study tour planned for June this year.

The tour, limited to 20 people, is the highlight of the first year of the group's existence and will take in visits to all the key laboratories and companies involved in fifth generation work, in the US and Japan.

So far Muller has had responses from about 10 organisations, although the literature describing the insight operation has not yet been circulated. He is confident of

## Members switch on to problems of cable TV

by our Parliamentary Correspondent

MEMBERS switched their attention from rural telephones to cable television during the report stage of the Telecommunications Bill in the last days before the Commons closed for the Easter Recess. Information Technology Minister Kenneth Baker announced that the government would soon publish the White Paper setting out its views on regulations needed to control the development of wide-band cable systems.

Labour MP John Gilling took this moment to make a further attempt to ensure that responsibility for installing and developing cable systems would rest exclusively with British Telecom.

MPs had learnt during the earlier committee stage of the Bill that Baker increasingly favoured the notion that long-term development of cable should be on a national basis and must integrate telecommunications, broadcasting and data transmission.

Gilling suggested that British Telecom was ideally placed to do this.

Baker rejected Gilling's call, stating that the whole point of the Bill was to remove BT's exclusive privilege. The government believed that competition and diversity were necessary if the reasonable demands of the people of this

country for telecommunications were to be met.

Gilling also accused the government of failing to invest in the development of fibre optic field in which the UK was second to the world leaders and had export opportunities. The price total of £5.5m earmarked was not enough, said Gilling.

After the cable debate, the Secretary of State for Labour John Birt announced that the British Standards Institute would carry out the necessary technical assessment of maintenance of a routing apparatus by independent engineers following the Baker move.

Baker moved the third reading of the Telecommunications Bill before the Easter holiday.



MULLER... Leading Insight.

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## New IBM boss reshuffles board

by Kevin Cahill and George Black

IBM's new chairman, John Opel last week re-shuffled the company's top management as the firm made another push in the mini-market.

Gone is the old-style power centre of the corporate office and its reporting management committee, to be replaced by a corporate management board.

The corporate management board will consist of senior corporate and operating unit executives, such as the presidents of large divisions of IBM, and will number 60 or more people.

The board will be run by a policy committee consisting of just three people: John Opel, IBM president, and Paul Rizzo, IBM executive vice-chairman of the company. The other key committee - called the business operations committee - consists of nine people and is headed by IBM

senior vice-president Dean Phipps. Frank Carey is a member of this committee, and as such retains considerable clout, though the overall trend according to commentators is to ease out the older generation of Carey-era directors and ease in Opel appointees.

IBM has brought in new versions of its System 38 and Series-1 minicomputers, doubling their internal memory. The latest in the System 38 range is the Model 8, with storage of five to eight Mbytes. Previous maximum was four Mbytes. The number of terminals that can be linked up is increased from 80 to 128. Price range is from £50,000 to £350,000.

The improvements are intended to make the machine more flexible and more useful for larger installations, competing against IBM's own low-end 4300. The company is thought to be mounting a sales drive for 38s this year, aiming at banks and oil companies, among other large users. A statement of

direction issued in February indicated that it intended to push System 38s along the Systems Network Architecture (SNA) route - this would be the first step in that direction.

A Xephon user survey on the System 38 recently found only 17% of those polled to be satisfied with its performance. Model 5 being the most criticised.

This week's upgrade could go much of the way to overcoming those difficulties, strengthening IBM's position in the rivalry with DEC, Data General and Prime for the mini market.

IBM has also announced a faster version of its Series-1 machine. The 4956 processor is said to be 20% improved in performance, with one Mbyte of internal memory. Prices are between £9,000 and £15,000. The Series-1 has been widely praised, but IBM has been accused in the past of devoting too little development effort to it.



OPEL... Old-style power centre is gone.

## Iona micro firm calls in receiver

IO TECHNOLOGY, UK manufacturer of the Iona microcomputer, called in the receiver last Friday, only a year after it went public raising £500,000.

Philip Ramsbottom and Raymond Mackie, of accountants Peat, Marwick and Mitchell, who have taken charge of the company's affairs, are hoping to sell it as a going concern.

Main reason for IoTechnology running into trouble seems to have been delays in getting the eight-bit Iona 1100 production in the second half of last year. By October it had signed up only 15 dealers, though it was aiming for as many as 180 outlets.

Iona was launched in the autumn of 1981, with shares being floated on the unlisted securities market the following April.

Completing systems including twin floppy discs and colour printer were priced at £3,570. But by the time it came out IBM, DEC and other big firms had already appointed dealers for their small machines and ACT's Sirius had made a big impact.

## 'Engineers can end arms race'

by Julie Cotterill

CUTTING arms manufacture will not result in massive redundancies, and it is up to electronics and software engineers to push for an end to it by seeking more "socially appropriate" technology. These were the views put forward at the first Electronics for Peace conference in London last week.

"We have got to keep pressing on the companies that there is money to be made in peaceful products," said Tim Webb, national officer of the ASTMS. "The Japanese have proved it." Less than one per cent of Japan's gross national product is spent on defence, compared with the UK's five per cent. "It is ironic that Japan's success has been in electronics," said Webb.

The UK government spends 52% of its R&D budget on defence, and there are about 40,000 scientists in this country working in this field. Yet this has not prevented a shortage of 16,000 key programming staff and 7,000 electronics engineers, nor the loss between 1978 and 1980 of 25,000 information technology jobs, Webb pointed out.

He observed that a trade union's prime interest is in job security. "If my members' interests are perceived to be the furtherance of the arms race, then while I might disagree, I have to represent



WEBB... 'There is money to be made in peaceful products.'

them." For Electronics for Peace to succeed in its aims of producing socially useful, rather than destructive weapons, it must appeal to both unions and management. "Get through to the trade unions that they are central to change," Webb urged.

"Electronics for Peace is the most important organisation in the peace movement," said Webb. "It strikes at the heart of the military establishment." BFP believes that responsibility for the arms race lies squarely with designers and makers of the lethal hardware - therefore engineers have a unique

role to play in combating it.

The conference established five local groups for the network - Cambridge, Bristol and Bath, Thames Valley, London and the South Coast, which will be served by a quarterly newsletter. The network plans to try to involve local institutions such as the IBB.

"People tend to adopt tunnel vision about the technology they are working with, without looking at the social implications," said Webb. BFP sees the linking and supporting of socially aware engineers as vital to bringing about change.

## CAD/CAM centre is in the offing

by John Kavanagh

THE UK is on the way to getting a second national centre of excellence for computer-aided design. The CAD/CAM Association and Cleveland County Council are planning for government and the backing for a demonstration training and advice centre in the Middlesbrough area.

The move comes hard on the heels of a UK-led takeover of the government's Computer Aided Design Centre, which was a danger of following CAD specialists Cleveland County Council are planning for government and the backing for a demonstration training and advice centre in the Middlesbrough area.

The man behind the initiative is Eric Johnson, who is responsible for keeping in touch with the NCC's 280 members in the computer and systems supply industry. He is working with a group of senior university people involved in promoting liaison with industry.

He pointed out that the government's Alvey Committee proposals on fifth generation computing for the UK stressed the need for university work to be brought to the market.

"Universities have a lot of expertise in automation, business administration and computing and mathematics," Johnson said. "We believe there is a lot of software around but many universities lack marketing expertise. For example much of their software is probably not documented to commercial standards."

"We want the grant to see if this is so and then to put up proposals on the marketing, distribution and documentation of the software to software companies and computer manufacturers. We do not expect universities to sell to end users."

Johnson backed up the recent findings of Matthew Bullock, the senior Barclays Bank manager whose report on a US study tour said UK companies should look to the success their US competitors had in working with universities rather than setting up big research operations of their own.

Douglas Eyles, director general of the Computing Services Association, said, "This job needs doing and our members would be interested in university software. But too many academics think it's all about clever ideas when the real problems lie with marketing and distribution."

## Academic software heads for market

by John Kavanagh

UNIVERSITY software could be sold by software houses if a National Computing Centre proposal is accepted by the Department of Industry. The NCC has asked for £37,000 to back a survey of software produced in universities and a study of gaps in the software market. The money would also be used to help universities prepare proper documentation for the commercial market.

The move has been welcomed cautiously by the industry, which fears academics might have a unrealistic view of what software marketing is all about.

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## Burroughs, Plessey in co-operation talks

by Donald Kennett

BURROUGHS last week revealed that it is holding discussions with Plessey "to explore avenues of co-operation" such as an exchange of technology or an OEM agreement. The discussions have been going on for some time, a spokesman said, but nothing has been signed.

For the past two or three years, joint activities with other companies has been an important part of Burroughs' strategy, with deals ranging from the acquisition of Convergent Technologies of the system it sells as the B20.

"The company has extended its external acquisition activity far beyond what it had been in the previous 15 years," a spokesman said. "There has been a much greater willingness to bring in the technology if there were gaps to be filled."

Talks were being held with a large number of companies in Japan and elsewhere, he said. A possible area of common interest would be the links between tele-

communications and information processing. Technologies in several areas were converging, so companies involved in them were looking at how to fill out their ranges.

Although Burroughs' net profit fell to \$117.6 million last year from \$148.9 the year before, the company is not constrained financially in pursuing its acquisition policy.

"Our view is we are ready to invest where we think that is needed for the company," the spokesman said.

Plessey declined to confirm the talks with Burroughs. "Plessey has discussions with all types of companies all over the world on a variety of issues. We cannot confirm that one of those is Burroughs," a company statement said.

The company recently acquired the public telephone exchange manufacturer Stromberg-Carlsson and a 12% holding in satellite and cable television company Scientific-Atlanta as part of its strategy to gain a foothold in the US.

Johnson backed up the recent findings of Matthew Bullock, the senior Barclays Bank manager whose report on a US study tour said UK companies should look to the success their US competitors had in working with universities rather than setting up big research operations of their own.

Douglas Eyles, director general of the Computing Services Association, said, "This job needs doing and our members would be interested in university software. But too many academics think it's all about clever ideas when the real problems lie with marketing and distribution."

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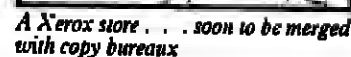
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high frequency radio system MFT, which in 1981 won the company the Queen's Award for Technology. Finland has ordered

It has not yet been decided which microcomputers will use the

**MARCONI** has found another overseas buyer for its fast-growing high frequency radio system, **MMFT**, which in 1981 won the company the Queen's Award for Technology. Finland has ordered the system for its Department of Posts, Telegraphs and Tele-

instead created in a feverish burst of activity in the following months. Paradyne is also alleged to have demonstrated an encryptor that

high frequency radio, MFT, which in 1981 won the company the Queen's Award for Technology. Finland has ordered

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## DATA PROTECTION

Hannan Rose thinks data processing professionals should stop thinking of themselves as just technicians

# Act responsibly if you want to receive mature treatment

THE government proposes to give itself widespread exemption from the provisions of the Data Protection Bill.

There will be no scrutiny or review whatsoever of information required for the purposes of national security (Clause 27) and Clause 28 would waive the requirements of confidentiality for information required for fighting crime, collecting taxes and duties and controlling immigration (Computer Weekly, 7 April).

However, the government has very firmly set itself against granting exemptions outside very narrow areas of health and social work (Clause 29), judicial appointments (Clause 30), "home" computers and unincorporated clubs (Clause 31) and other specified spheres such as information covered by legal professional privilege and statistical and research data (Clause 32).

It is likely that the government will come under renewed pressure in the House of Commons to modify these provisions. First, given the storm which has grown up around the clause in the Police and Criminal Evidence Bill which would have allowed the police access to otherwise confidential information, Clause 28 will probably be attacked again.

This battle will be particularly sharp if those who have been so concerned with the Police and Criminal Evidence Bill realise that the government intends that a circuit judge will have to agree that — for example — a lawyer's, doctor's or priest's records would materially help enquiries, whereas the Data Protection Bill only requires the person holding the information to have "reasonable grounds for believing" that failing to make a disclosure would prejudice the prevention or detection of crime, the apprehension or prosecution of offenders, the assessment or collection of any tax or duty or the control of immigration, and that there is no exemption for hospital or pastoral records.

This last point opens up a wider area of debate: to what records about himself should an individual

have access and to what extent should this access be determined by the accident of whether the records are held automatically or manually?

This was never debated explicitly in the House of Lords although it was raised on a number of occasions when the possibility of exempting further categories of information, such as personnel records, was raised.

The argument was often couched in terms of a concern for business efficiency, for companies might choose not to put their records on to computers if this led to them being subject to the provisions of data protection legislation whereas any material kept manually would not be so covered.

It should certainly concern the computing industry if a measure which should create greater confidence in computing inhibits the use of computers.

Further, the same issue is raised by the practical consideration of whether the Registrar with a staff of 20 is going to be able to cope with the work which is likely to be generated by the legislation.

**"The whole concept of data protection would come into disrepute if the mechanism of control proved incapable of dealing with the work generated by legislation"**

Many of those closely involved with the issue of data protection regret that the government has decided not to follow the recommendations of the Lindop Committee for a Data Protection Authority but this is a political — not to say ideological — decision based upon the philosophy of minimising the size — and cost — of governmental activity and quangos (quasi-autonomous non-governmental organisations) as a good in itself, irrespective of any longer-term consequences.

This decision is, therefore, unlikely to be changed in any way and the question which should now be asked is whether any clearly defined and legitimate areas

of exemption can be granted so that the Registrar and his staff can be helped.

Again, the whole concept of data protection would come in to disrepute — thereby bringing the control in to disrepute — if the mechanism of control proved incapable of dealing with the work generated by the legislation.

As has been indicated previously, areas which might be considered for exemption are those which are normally considered confidential by custom — discussion with legal, medical and religious advisers and the process of job reference and personnel records — or where British practice has not previously given individuals access to information about themselves.

An example of this last category — which would also be an example of the great benefits of computerisation — would be the examinations conducted by large organisations such as the GCE boards, large professional bodies and the Open University.

It might, of course, be that



"I hold full personal and professional details of all our major opponents."

one section of a paper, which will be marked by different people.

In any case, a senior examiner will read a selection of papers to see that there are no gross discrepancies. Then there will be checks to ensure that no subject has been unduly difficult — or, for that matter, unduly easy.

Finally, in any examination where papers are taken individually but a pass or a class of

degree depends upon the candidate's overall performance in a number of papers, that overall performance is reviewed.

At the end of this process, the same "raw" mark might mean different things in different papers and it is inevitable that some candidates will be left failing a subject or a whole examination by a narrow margin or will just miss a higher class.

The problem of providing 125,000 sets of explanations of marks will be great (in some cases even embarrassing) especially as the examining bodies would wish to ensure that the information was not merely intelligible to those who receive it (as now required by Clause 21(1) following a government amendment in the Lords) but is intelligent and defensible.

The Bill does provide for a fee to be charged which is supposed to cover the costs of providing information to the individual (the "data subject").

This raises a further problem in that the fee should not be such as to prevent individuals obtaining the information held about them and there will, therefore, be a prescribed maximum and this might not be sufficient to cover the costs in a complicated area.

These are, however, practical difficulties and not the same as the principle of whether it is right that examinees should have access to their examination records. At first glance, it would not seem unreasonable that they should; but could there be some unintended consequences of this?

In particular, there is a danger that the examination process will be distorted to avoid the difficulties of narrow failures. If only 5% of marks mean a narrow failure on a paper or the margin between one class and another, in a system with 100,000 papers, there are 5,000 likely requests for re-marking which are either to be refused or granted, threatening the organi-

sation with substantial extra work. Examiners — who are not overrewarded — might either refuse to expose themselves to this risk at all or could avoid it by only giving "safe" marks and not giving those in the marginal areas.

As such marks are sometimes raised on re-marking or could affect the candidate's overall performance, the result would be to distort the examination process and the value of the examination.

This one, limited, example raises two general considerations. First, the government is not legislating for privacy or for any other principle, but so that Britain can comply with the provisions of the Council of Europe Convention.

This has led to the government emphasising the protection of data whereas the Convention is "for the protection of individuals with regard to automatic processing of personal data". The difference is subtle but very important for, as a result, the questions of principle have not been discussed widely.

This directly affects the second point and, indeed, makes it even more important than it otherwise would be. The wider questions will not just go away and if those who work in computing wish to be treated as more than mere technicians, let alone have pretensions to being considered as a profession, they must be concerned with the application of their skills.

Do they regard information as being different because it is kept as "data" automatically rather than as files or pieces of paper manually? And do they have views on the principles of whether some categories of information should be exempted or not from the provisions of the proposed legislation?

If they wish to be treated responsibly, they must act responsibly and at the very least indicate that they see issues of principle as such and neither treat them as technical issues nor as matters which do not concern them.

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# IBM share stall improves prices

WITH its share price stalled, IBM's customers can expect better purchase prices as the company looks for "revenues now" according to a recent report from Canada.

Wall Street, the financial centre of the United States, was, in part, miffed, euphoric about IBM's annual results published a few months ago.

The euphoria didn't rise to pushing the share price to the \$125 that many analysts thought it should reach, though, and Canadian IBM watcher Bob Djurdjevic reveals in his latest newsletter that IBM has suffered price erosion of 22% a year in 1982, and 20% a year in a compound rate over the past five years.

To achieve the 13% a year sales revenue growth that IBM has actu-

ally shown over the past five years requires a 30.8% a year annual growth in unit volume of business.

This, according to Djurdjevic, brings with it overheads in the form of additional sales staff, larger production facilities, bigger premises, etc, all of which add up to higher costs.

To just hang on to unchanged profits over the years IBM would have to make a gain year on year of 17.8% in cost savings through higher productivity. This Djurdjevic compares to walking on water, and the buyers of shares on Wall Street, the people who actually give judgment on both a company's performance and the brokers' recommendations, just don't think that IBM can walk on water.

In fact, IBM's cuts over the five

years 1978 to 1982 increased at a rate of 23.9%. This leaves little leeway over the theoretical 30.8% unit volume needed to keep pace with price erosion.

Djurdjevic concentrates on the lease sales mix as a key factor in determining IBM's real growth rate and potential.

Much of the improvement came last year when profits rose a smart 22% on the year before, which wasn't all that difficult given that IBM has shown also flat profit growth over four of the past five years. All the growth figures quoted by Djurdjevic are nominal in the sense that they don't reflect inflation, which, if taken into account, would just about halve the growth rate in both sales and profits.

Given that IBM is using a pricing strategy of offering cheaper purchase prices in relation to lease prices in order to get the effect of "revenue now" rather than the deferred and marginally better revenues obtainable if leasing is used, Djurdjevic foresees a lot more of the same from IBM.

This means that the opportunity to get a better deal on an equipment purchase from IBM will continue, where a customer can take advantage of the situation. How much of an advantage can be gauged by the fact that when IBM announced a 15% drop in the purchase price of some mainframe products last year, the company simultaneously announced a 15% hike in lease charges.

## ... but who cares about IBM Japan?

WHO cares what happens to the Japanese subsidiary of IBM?

Well, American investors for a start. They collectively reduced IBM's value on the US Stock Exchange by \$1.5 billion on the news that profits at the Japanese subsidiary had dropped by 9.2%.

IBM Japan is probably the company's biggest overseas subsidiary and in 1981 the subsidiary turned in substantial sales and profit gains, alongside an increase in exports of over 50%.

Predictions for 1982 were nothing if not rosy and centred around estimated growth in sales of 25%.

Part of the importance of the projections lay in the fact that if they had been achieved IBM Japan stood to regain the title of the biggest computer company in Japan, a title the company lost to Fujitsu only two years ago.

Titles like number one company count in Japan and Fujitsu, which put on sales growth of just under 16%, took the IBM projections seriously.

In the event, the margin, far from moving against Fujitsu, has moved in that company's favour.

According to IBM the reasons for the stall in sales growth and for

the profit decline was an increase in material and production costs and partly to foreign exchange losses on imports caused by the sharp depreciation of the yen. In fact, the Japanese yen has appreciated throughout the year against most currencies.

None of the Japanese computer manufacturers reported increased material or production costs and what IBM seems to be trying to do is conceal the impact of the Japscan affair on the company's order book.

While IBM deny that the company has experienced any loss of orders over the US court case in which IBM sued two Japanese computer companies, Hitachi and Mitsubishi, credible commentators in Tokyo put the impact of the scandal as high as \$100 million in lost orders.

While the Japanese commentators feel that the failure to meet the projected sales target of 25% growth and the fall in profits proves them correct, they are at a loss to explain the very small growth in overseas orders.

It was widely expected that overseas orders would make up any shortfall.

## North Star sales rise by 90%

NORTH Star Computer Inc., established in the UK and with a factory in Ireland, has reported a 90% increase in sales for 1982. The parent company in San Leandro, California, disclosed revenues of \$41 million for the year ended January 31, 1983, compared with \$21 million for the previous year.

Profits, which weren't specified, grew at 100% according to the company and with an average return on capital at 57% North Star has not had recourse to its \$3 million line of credit with the Paris Group.

## Prutec invests

PRUTEC, the venture capital subsidiary of insurance giant Prudential, has invested £2.5 million in Panorama Office Systems Ltd. The company, based in Milton Keynes, has developed a replacement for the office typewriter called the personal Typing Centre.

## Share success

APPLIED Computer Techniques achieved 98.5% acceptance from existing shareholders for its £2 million share offering recently. The shares, priced at 280p, made an immediate profit for the taker of over a £1 per share.

## Business is busy

BUSINESS Computer Systems has continued to advance on both the profit and turnover front in year end results announced last week. Profits were up £23,000 to £510,000 on turnover of £7.5 million compared with the previous year's £6.24 million.

## MSA may make even more money

by George Black  
MANAGEMENT Science America's revenue will rise from \$96 million last year to \$287 in 1986, predicts a study of the company's finances by New York business analysts Frost and Sullivan.

MSA, re-established in 1971 under US bankruptcy law to grow into the largest independent software house in the world, is expected to make over \$21 million profit in three years' time.

Credit for this is given to chief executive John Linky, for cutting back loss-making consultancy and bespoke programming enterprises and switching to packages.

But despite MSA's great success the market remains highly competitive and the report warns that MSA has a number of potential rivals with substantially greater resources.

IBM, despite its current support for independent developers, will probably move more into applications software as it becomes more lucrative, according to Frost and Sullivan. Other key rivals are seen as Informatics, Applied Data Research, Cullinet, Pansophic and UCO.

Changes in accounting methods could lead to MSA's leading position looking less good on paper; ADARSO, the trade group, is now considering changes in how revenue from maintenance is treated by software companies in their results.

In terms of earnings per employee MSA came only fifth in the league, which was led by Pansophic. But MSA's spending on research and development at nearly \$16½ million a year, far outdistances others in the field.

Following agreements between MSA and hardware makers Honeywell and Sperry on marketing versions of its packages for their mainframes, further such deals are in the offing, the survey suggests.

MSA has been historically IBM-aligned, and reluctant to commit itself to supporting possibly unprofitable non-IBM projects. But in the last two years agreement has been reached with both Honeywell and Sperry for them to make their own conversions with MSA's support.



IMLAY... credit

## SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Data 84/83				Index 731.26				Growth 487			
1982		London Stock Exchange		1983		US Stock		1983		1983	
Price	Change	Stock	Price	Change	High	Low	Stock	Price	Change	High	Low
462	24	ACT (Am Genl) (250)	368	-10	437 1/2	364 1/2	Amstar	26 1/2	-1 1/2	28 1/2	24 1/2
214	12	AGC (Am Genl) (250)	210	-10	225 1/2	205 1/2	Auto Data Pwr	10 1/2	-1 1/2	12 1/2	10 1/2
194	14	AGC (Am Genl) (250)	194	-10	210 1/2	184 1/2	Auto Data Pwr	10 1/2	-1 1/2	12 1/2	10 1/2
214	12	AGC (Am Genl) (250)	210	-10	225 1/2	205 1/2	Auto Data Pwr	10 1/2	-1 1/2	12 1/2	10 1/2
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# Scicon gets its Manman for Vax

MANMAN, one of the most successful manufacturing software packages, has been converted to run on DEC's Vax minicomputers. It is undergoing trials at two US sites and is due for launch in this country in late summer.

The system was developed by ASK Computer Systems in California in 1970, the brainchild of Sandy Kautzig, a then 23-year-old woman whose fortune since has been built on this single product.

She began work on it in her spare bedroom and is now president of a company which expects to turn over \$35 million in 1983.

The system has expanded to some 200,000 lines of code and has 150 installations worldwide, most of them in the US. Up to now it has been entirely based on Hew-

lett-Packard's HP3000 mini-ASK's 200 staff sell and support it in the US, but licences have been granted for distribution in the UK, France, Scandinavia and New Zealand.

British agent is the BP subsidiary and Europe's largest software house, Scicon. Now that the 20 man-year conversion has been completed, Scicon is looking for a pilot site to launch the Vax/11-750 and 11-780 version here.

Despite the slowness of British manufacturing companies to discover the benefits of computerisation, products division manager Mike Parker is optimistic. He admits it has been an uphill struggle to convince conservative factory owners of potential cost-saving.

Most of the 35 Manman users in

Britain are among the smaller high technology batch manufacturers with an annual revenue of £4-£8 million - although they also include well-known names such as ICI and Smiths Industries.

"If the recession is now coming to an end it will be these smaller firms which will be making the profits needed for computerisation. And a lot of them are already on Vax equipment," says Parker.

Parker wants DEC to be involved in marketing Manman so that he can tap DEC's large and fast-growing user base. With turnkey systems priced at between £96,000 and £156,000 Parker says that patience and persistence are needed by a Manman salesman.

He has a team of 15 lined up to support the software.



PARKER... Looking for a pilot site in the UK.

## PPL sells £100,000 of accounting systems

PACKAGE Programs has sold £100,000 worth of accounting systems to four insurance companies. It now has more than 20 clients in the insurance sector, including Phoenix, Commercial Union and Lombard. Latest to sign contracts with the London software house are Graham Life Assurance Society, United Friendly, Scottish Widows and Stewart Wrightson.

The first three are adopting the general ledger system. Graham is also to use PPL's financial reporting method.

Stewart Wrightson and Graham are taking on the accounts payable system and United Friendly is to use the management and district reporting system.

The general ledger and financial reporting packages are being upgraded for ICL hardware in an undertaking which the subsidiary company PPL-MMS is calling Project Proteus. It is due for completion by June and is aimed to give compatibility with the IBM general ledger version and across ICL's 1900, 2900 and M239.

## Revelation

A FRONT-END to the IBM personal computer's operating system PC-DOS is being marketed by Doncaster systems house Revelative Data Machines (RDM). Called Revelation, it was developed by Cosmos in Washington, US, and is based on concepts drawn from the Pick operating system.

RDM managing director Neil Ratcliffe claims the software is compatible to existing Pif systems as well as applications at CMC Reality, Honeywell, UK mate and DEC hardware.

## SPL chief retires at 60

SPL INTERNATIONAL chief Peter Adams is to retire on reaching 60 at the beginning of November. Adams handed over the managing directorship to David Thomson last December and now has only a directorship of the holdings company SPL.

He joined the company from British Overseas Airways Corporation in 1968, five years after it was set up. He was manager of the real-time software division, joining the board in 1972. Three years later he became managing director, taking over from the founder Ken Barnes.

## UCC updates disc management system

MAJOR improvements in the handling of disc storage are being claimed for the University Computing Company's update of its UCC3 system.

The product, which has about 400 users worldwide and counts Barclays Bank, GKN, Philips and the government among its British clients, has now reached release 2.0. Vice-president Michael Cocks said its fast data movers gave the best migration and backup service yet available for IBM mainframes.

"It has important new facilities which will be a great advantage to all our users, especially those who are updating their mainframes

from 3350s to 3380s," he said.

Release 2.0 enhances data handling in direct access storage devices (DASDs) in a number of ways, according to Cocks. It reduces the amount of space needed and decreases time spent on keeping track of data sets.

"There is a growing recognition of the need for disc management in this country," he said. "Although the cost of disc space is coming down, at the same time the proliferation of online systems is making greater demands on space and people are becoming aware of the problem."

Existing customers will get the

latest release automatically, but UCC thinks there is still enormous potential for creating a new market. Its parallel-running tape management system UCC1 has some 70 UK users, a far greater number than UCC3 has so far achieved.

In North America about 85% of all IBM mainframes running under OS and MVS operating systems now employ UCC1. But UCC3 came late into the field three years ago and is now seeking to exploit what the company considers as deficiencies in IBM's own offering, HSM.

Software file is compiled by George Black.

Running under MVS, it has improved data movement, given automatic space release and automatic partitioned data set compression. Support for the virtual sequential access method (VSAM), which UCC has admitted was a traditional area of weakness, is said to be strengthened.

The London-based UCC Software Products is the distributor for the American UCC, owned by the Wyly Corporation of Dallas and ranked second biggest independent software supplier in the world after MSA.

## MICRO NEWS

# Europe to get Corona IBM PC lookalikes

US COMPANY Corona Data Systems is gearing up to bring its pair of IBM lookalike micros into Europe, following its success in America. Over \$100 million of orders have been signed there from major distributors for the desktop and portable pair.

The Corona PC and its portable brother were launched last November in the US, and are getting their first European showing at this week's Hannover Fair, where Corona's European marketing manager, Fred van de Ouderweetering, will be aiming to sign up the first batch of European distributors for the machines.

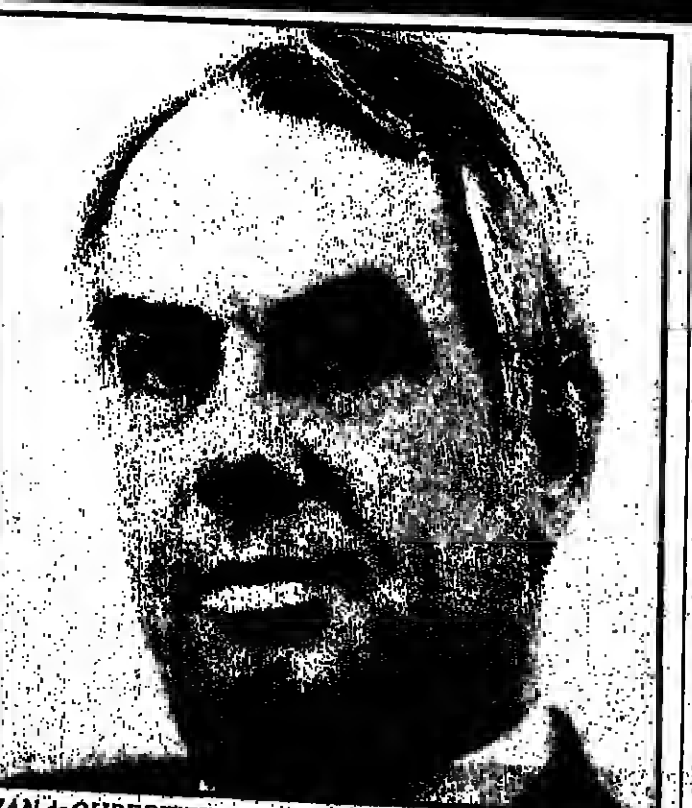
Like the IBM Personal Computer, both Corona models are based around the Intel 8088 microprocessor, and run MS-DOS and CPM-86. They are software and hardware compatible with the

IBM PC, but cost \$1,300 less. The desktop model, with 128K of RAM, monitor and single floppy drive costs about £2,600, with a clutch of operating system and application software thrown in. The portable machine, with a nine-inch monitor screen, costs £200 less.

European prices will be in line with these, but have not yet been fixed.

Van de Ouderweetering says that he is looking for at most 20 European distributors, and hopes to shift 20,000 machines in Europe this year. Corona is also talking to European OEMs interested in buying the guts of the Corona PC to build into their own systems.

Production is in California at present, but according to van de Ouderweetering, other manufacturing facilities will be needed to keep up with demand. Korea looks



VAN de OUDERWEETERING...

the most likely place for Corona to move the highly labour intensive board and case manufacture to. Corona was set up in 1981 to

develop hard disc subsystems for Apple and IBM micros. The Corona PC family is its first venture into complete systems.

## Motorola to tackle Seeq with single chip EEPROM

MOTOROLA is to challenge Seeq, the pioneer off electrically erasable PROMs in the single-chip computer market. An EEPROM version of its 6805 processor, the 6805K2, will come out next year, to take on Seeq's 72720 "adaptive microcomputer".

Motorola has already built single-chip microcomputers containing EEPROMs for on-chip program memory, but only as custom devices, not as announceable standard products.

But as with other versions in its single-chip family developed for particular customers, for example that integrating a phase-locked loop on chip, the option will be come generally available.

Seeq's device replaces the standard ROM on Texas Instruments' IMS 7020 eight-bit single-chip microcomputer with EEPROM, and will be second-sourced by TI.

The advantage of pulling together processing power and the ready reprogrammability promised by EEPROM technology is predominantly one of price. Single-chip computers are particularly cost-sensitive components, as they go into high volume applications, often in consumer goods.

By integrating program memory, whether mask-programmed ROM fixed at the design stage, EPROM or EEPROM, with RAM and peripheral functions on to the single processor chip, the component count for a functional system can be dramatically reduced, with cost savings in assembly as well as in the components themselves.

Motorola's approach to this market - still its most lucrative, accounting for something like 70%

of its UK business - is to offer a wide spectrum of devices. They are based round the same CPU element, with combinations of RAM, ROM, EPROM, I/O and functions like analogue-to-digital conversion.

"We use design modularity to optimise die size, and include features high volume customers want," says Motorola's microprocessor division general manager Murray Goldman.

The core of this product spectrum, at the low-cost end of the market is the 6805, derived from the original 6800 microprocessor and itself spawning more devices.

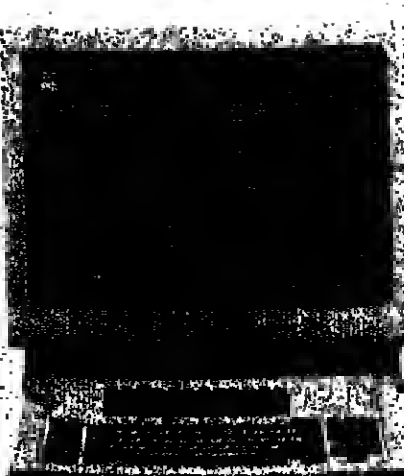
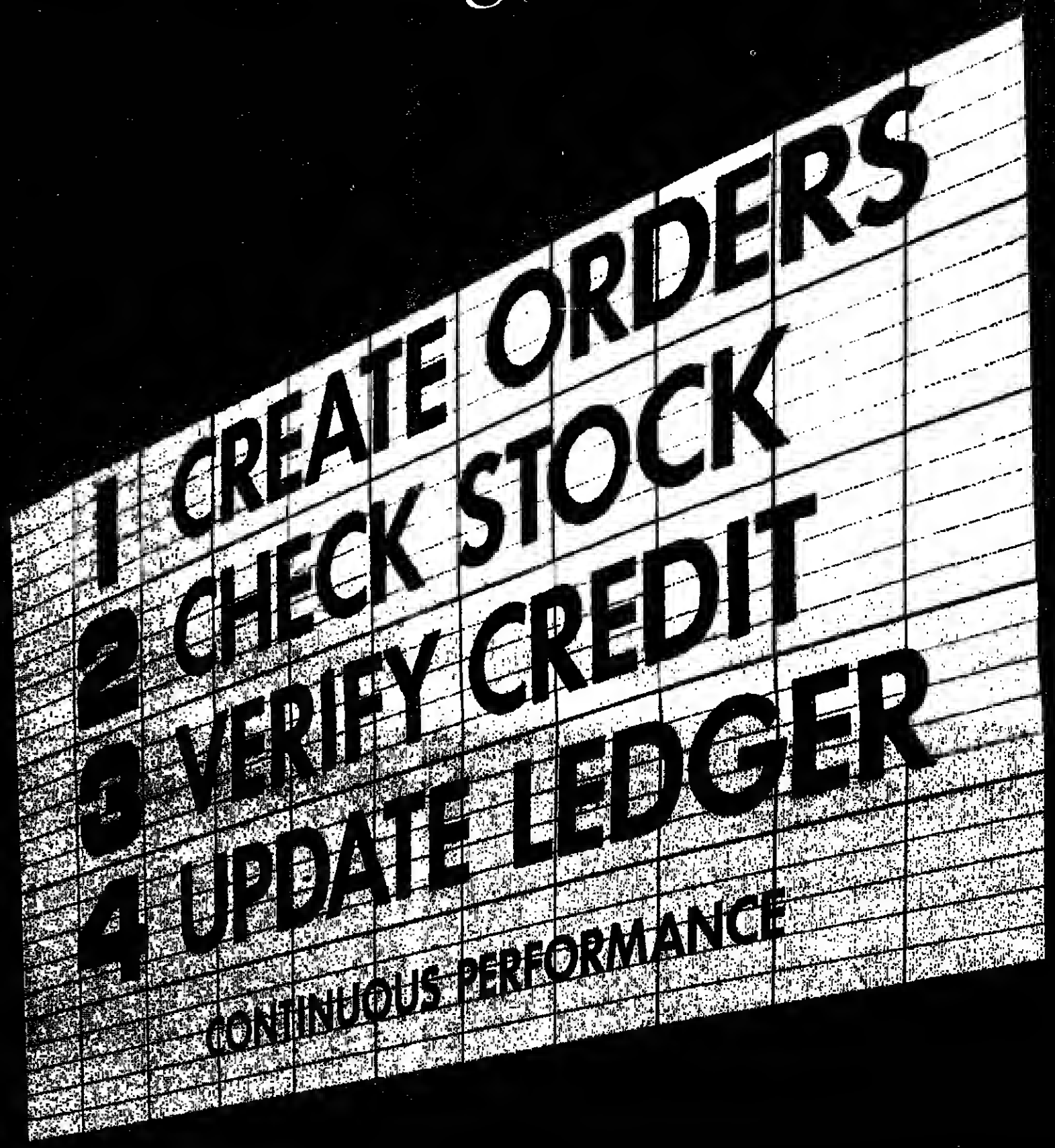
General trends have been to greater ease of programming and flexibility through EPROM and low-power CMOS devices.

It also has an off-shoot into a serial bus family, the 6804, which is slower than the parallel bus 6805, but comes out cheaper. HCMOS versions of this will appear this year, and HCMOS early in 1984. HCMOS is Motorola's merged NMOS and CMOS technology, using CMOS devices in the power hogging bits of chips.

"HCMOS is our thrust," says Goldman. "We made the key decision last year, and are very happy with it." Others have taken similar paths, as they move to more densely packed chips at the top end of the processor scale.

But as Goldman points out, greater density does not necessarily mean bigger chips cramming in hundreds of thousands of components. The 6804 was Motorola's smallest ever processor die, and came out at around the same time as its largest ever, the 68010.

# IBM present 4 separate programmes now showing on one screen.



Until now, to display and process four separate sets of data you needed four separate screens.

Now IBM have changed all that with their revolutionary new multi-screen display station, the IBM 3290.

It's a 9,920 character, flat plasma panel display which can be divided into four 1,920 character screens using different programmes at any one time. Or, if you want, one interactive screen and three others for reference.

To help your operator, the 3290 is fitted with an anti-glare, distortion-free screen with a tilt facility.

And although it has four screens, it's only 10 inches deep and less than 20 inches tall. So the surface is hardly larger than a standard terminal screen.

Despite its size it could really increase your productivity, and reduce the need for printout and additional work stations.

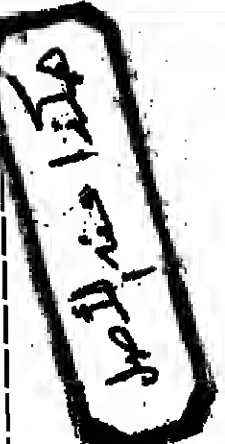
Fill in the reply paid coupon or attach your business card and we'll send you more information.

However, to really appreciate the remarkable quality of this exciting work station, ask your account representative to arrange a demonstration.

To: Amanda Tilley, FREEPOST, 28 The Quadrant, Richmond TW9 1BR. Please send me more information about the IBM 3290.

Name.....  
Company.....  
Position.....  
Address.....

Post Code.....  
Tel.....  
City.....





## PLATFORM

Tony Blake is managing director of Nix, the data communications specialists based in Haverly, Wymondham, Hampshire.

## Academia and trade can thrive together



FINANCIAL pressures are forcing many higher education establishments to examine ways to bolster their resources through involvement with commercial undertakings. It is a pity that financial pressures should have to force this move, since great benefit can accrue both to the educational and commercial worlds from a close liaison and collaboration.

That this is both possible and productive is shown by the experience of other countries, particularly the US and West Germany.

Clearly, no commercial organisation can survive in the long run without a product development strategy. The higher the technology of the business, the more central that need tends to become and the greater need for a constant flow of new products or product improvements. The universities, in their role as teachers, help to provide a flow of suitably trained people. As researchers, discoverers and inventors, they can also provide a flow of ideas.

The actual process of moving a potential new product from its university birthplace to the commercial marketplace has six phases. The first is identification of the product.

A new technique or a novel solution to a widespread problem might be discovered within a university as an offshoot of its own requirements, or an alert company might spot a unostentatious need in the marketplace. It is important, however, for industrial organisations to accept that the onus lies with them to unearth the possibilities. Any company which does so will soon find that its major problem will be one of selection rather than discovery, for commercial exploitation of a product or invention is not what the universities are there for.

However, the universities can substantially assist in this process simply by being less shy about their achievements and publicising what they are doing.

Next comes evaluation of market potential. This is clearly the function of the commercial party in the partnership, since it involves an analysis of the market size, competitive factors, pricing and promotional requirements as well as an estimate of the product life. Commercial judgment is necessary to decide whether to proceed with the project.

Having recognised the market potential of a product and of its appropriateness to its own product strategy, the next step is re-specification of the product. The commercial organisation will usually find it necessary to redefine in detail what is required of the product. From their own possibly limited experience, university personnel cannot be expected to be aware of all the features that would enhance a product's appeal to the general market.

### 10 YEARS AGO

FROM COMPUTER WEEKLY OF APRIL 12, 1973: Liverpool University increased its computing power by ordering an ICL 1906 worth £1 million... Philip Chappell was appointed to the ICL board... the first Univac 9700 mainframe arrived in the UK... users criticised George 3 for being inflexible... CDC formed a joint company with the Rumanian Ministry of Machine Tools and Electron Techniques... Hewlett-Packard computers and Teac software combined to fight the locust.

Tony Blake

## PROFILE

## The man who gets paid for saying how good DEC is

AS vice-president of corporate relations, Al Mullin must be good at his job. His company, Boston-based DEC, recently produced half-year figures showing a 38% drop in profits compared with the first half of 1981/82.

DEC shares, which are quoted on the New York Stock Exchange, promptly jumped from \$100 to \$120.

In other words investors, principally in the US, increased their estimate of what DEC was worth by over \$1 billion in one day.

And where does Mullin fit into this? His job is to travel the world telling all the people who have invested in DEC that they have done the right thing.

Despite the aura of success which surrounds the world's second largest computer company, this is not quite as easy as it sounds.

Investors like to see an annual income from their shares in the form of dividends. And this is particularly so with pension funds - probably the biggest group of investors in the world.

They have to pay their pensioners a monthly cheque, and can only do so out of the income they receive.

The core of Mullin's job is to tell investors that DEC does not pay a dividend.

More than that, he has to record that DEC has never paid a dividend, and in forecast that it will



MULLINS... "When the recession ends, DEC will be ready."

probably not do so until normal annual growth falls below 25%. The current slippage, to 15% or

less, is not normal, according to Mullin. "This is the second worst recession this century, and we're bound to feel the effect."

For DEC that "effect", particularly in the US, is that much of the company has in the bank, and the 100% of new capacity the company has added in the past three years.

"When the recession ends, DEC will be ready," according to the hefty ex-banker from New Jersey.

In private, Mullin puts the message over with considered fervour. In public, more of the physics enters the message, and the favour comes over with a sense of well researched certainty.

Much of Mullin's life is lived in large meetings of investors and industry analysts. Often when the people, not all of them DEC enthusiasts, see of DEC is Mullin's a rostrum, articulating the company's situation, prospects and future.

A wrong emphasis, an unexpected phrase from Mullin could wipe hundreds of millions off the DEC shares, just as easily as they put them there.

The caution necessary to do the job has entered his soul, and the private man is hard to discover. But the feeling of being a man, a good player now and manager, is strong.

In a way, he's very like DEC - solid, safe, enterprising within the total bounds of conservative risk-taking and pleasant.

## DOWNTIME

## How to sell a system . . .

SIMILAR sounding names can spell doom for microcomputer companies. The cautious, when setting out into the dog-eat-dog world of micro dealing, check any potential conflicts before fixing on what to call themselves.

One of the latest recruits to the morass of micro companies, John Clarke's Synchronised Computers, was originally intended to be named after the US company

whose product it will be distributing, Sci-Cam.

But to Clarke's practised ear that sounded a trifle close to systems house Scicon for comfort, so he went to talk to the Scicon moguls to see what they thought.

Sure enough, they threw up their hands in horror and could come to no deal over such homophonous company titles.

But every cloud has a silver lining. The name Clarke ended up with at least ties in with the computer's Seiko label - which conjures images of watches and a distributor in step with his product.

And Seicon is thinking of placing an order with Clarke for the Seiko computer. After all, a good salesman never misses an opportunity.



## Confusing the fraud squad

MANY computer fraud cases are not being reported because companies concerned fear that the fraud squad detectives are too ignorant of the technicalities involved.

But how otherwise do fraud squads gain the experience?

West Midlands Fraud Squad head detective superintendent Harry West admits that his officers are sometimes a little befuddled by computer fraud cases.

In one case involving a company liquidation, he tells me, his men returned from a raid armed with a library of floppy discs.

But where was the hardware to run them on?

The poor policemen, apparently, had ignored it because they had no known what to do with it.

## Space junkies

RESEARCHERS at Birmingham University claim that playing space invaders is addictive because killing the alien menace has a physical effect on the operator.

Raised heart rate and increased adrenaline levels can apparently sometimes emulate the effort expended in jogging.

"It's just like a pep pill," says one of the awfully-trendy Brummies.

## Ken's spot of liberal lyrical light relief

KENNETH Baker is Minister for IT, as you all know (you do all know, don't you?).

But his main occupation of the soul is the compilation of collections of poems.

And his taste is far from staid. Last year he published a book of satirical verse called "I have no Gun but I can spit."

After a particularly tedious com-

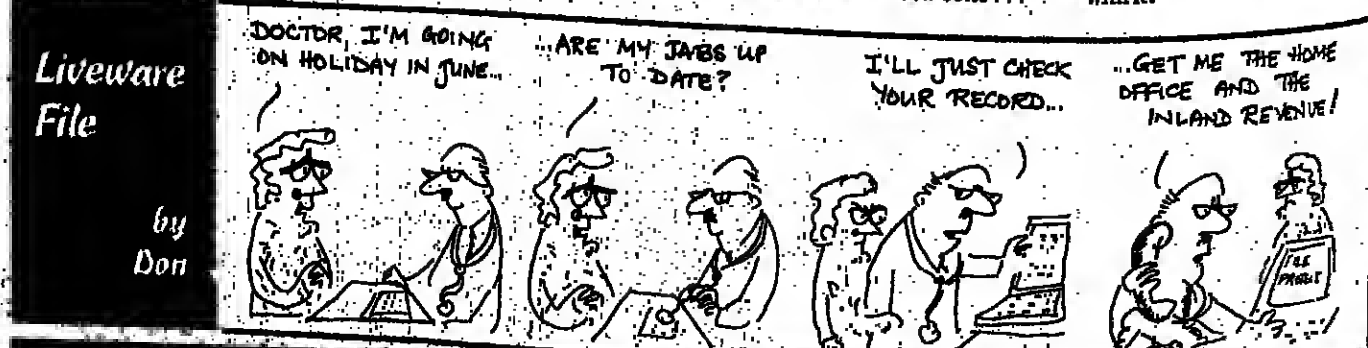
municative purchaser is anything to go by.

The prospect rang and said: "Hello, I wonder if you can tell me the name of an ICL dealer in London?"

An ICL information officer replied: "I'm afraid we can't divulge that kind of information over the phone."

Does ICL actually want to sell things?

While they sit a picking straws, Let them rave at making laws, While they never hold their tongue, Let them gabble in their dung, Let them form a grand committee, How to plague and starve the city, Let them write their goading quills Scribble senseless heads of bills, We may while they strain their throats, Wipe our arses with their votes . . .



# ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, April 14, 1983

## Universities need more money

THE University Grant Committee's allocation of "new blood" and information technology lectureships has brought predictable cries of disappointment from almost all quarters of the academic world. Predictable because there was no way that the financial resources being made available by the government could meet the flood of 2,250 applications for new posts.

In announcing the allocation on Tuesday of this week, William Waldegrave, Higher Education Minister, said the allocation "shows in practical terms the commitment of the government to universities." It would behave Mr Waldegrave, however, to try explaining that commitment to the mass of university applicants who will be left wanting this summer when final placements are made.

The extent of the problem the universities are facing was clearly elucidated by Brian Oakley, secretary of the Science and Engineering Research Council, which advised on the allocations. He explained that financial support was concentrated "where we believed it would do most good." There is nothing in that statement to take exception to. But here is the rub. Oakley added that "if you believe in centres of excellence, it is very difficult for new people to break in and oow is not the time to dilute the effort."

If there is no room for new people to break in we might as well abandon our efforts to remain a force in information technology. The new technical universities like Stirling, Salford and City have been put forward as the UK's best hope of linking university research and the commercial marketplace. But because they are new it seems they have to go to the back of the queue when funds are handed out.

It is not Brian Oakley's; or the SERC's or the UGC's fault. They are trying to administer the system the best they can with the resources available. The problem is that there are not enough resources available to ensure the nation has an adequate base of skilled manpower. Education should be one of the nation's largest growth industries, and that it is not gives the lie to the government's purported commitment to our universities.

## A Bill that offends

NEITHER fish nor fowl, nor good red herring. The Data Protection Bill now before Parliament has pleased no one. Computer industry bodies give it only the most grudging support, and that only because the Bill is necessary to bring UK law into line with the EEC convention on privacy.

Without it, a large amount of computer business with Europe would be at risk and the industry would rather have something than nothing. Outside the industry the Bill has attracted opposition from the UK's doctors in the form of the British Medical Association, the accountants represented by their Institute and a wide body of legal opinion.

Most contentious Bills inspire this amount of criticism but few, outside the respective committed ministers, will claim that this particular one is well-drafted. It shows all the signs of being prepared in haste, despite two official commissions and over 10 years of deliberation. The Home Office, which bears responsibility for the Bill, believes that only 80,000 computers will be registered - industry sources put the estimate as high as a half million.

But although the Home Office bureaucrats must bear the blame for the faults of the Bill they are not the only ones to fault. For, outside a few dedicated individuals in professional computing bodies, the industry as a whole has treated data protection as something infinitely boring.

At the same time, according to a survey made by Brunel University, a large majority of dp managers consider it important.

Few of these people made their voices heard over the last 10 years. The Bill now faces its second reading in the Commons. If it is passed and works out as badly in practice as most opinion would have it do, the computer industry will share a proportion of the blame for having been almost silent.

## 1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Ian Fisher of Wokingham, Berkshire, who wins £5.

Nanny and the personal computer have much in common. Predictable, and prone to a pedantic insistence on being properly addressed, both tend to make themselves indispensable, and may in time even become objects of affection.

Daily Telegraph

## LETTERS

## Legend of the robot

YOU quoted (CW, March 13) a story told by Dr Louis Robinson, IBM corporate director of university relations: "Legend has it that as a young man St Thomas Aquinas went to the home of his great teacher, Albertus Magnus, and found a robot at the door. The robot's duty was to enquire as to the business of the visitor. St Thomas, man of God, destroyed the robot, thus establishing that robots are evil things."

I should like to know the source of this "legend" and when it first occurred. Albert the Great and St Thomas Aquinas lived in the 13th Century yet the word "robot" was created only in 1923 by the Czech dramatist, Karel Capek, in his play, *Rossum's Universal Robots*.

Moreover, Thomist philosophy suggests that St Thomas would not be prejudiced against robots or any of the artefacts produced by human society unless they had been positively shown to be evil: "Gratia non tollit naturam sed perficit."

J. ALAN SMITH

Bppling.

## Introduction to Forth

I READ with interest the article on Forth (CW, March 17). However, you failed to mention one of the most powerful versions on the UK market. I refer to the Acornsoft implementation for the BBC Microcomputer. This is a complete Forth system to the 1979 FIC standard, capable of taking full advantage of the BBC Microcomputer's powerful graphics and sound facilities, and written for us by Richard de Grandis-Harrison, chairman of the UK Forth Interest Group.

The system is accompanied by a book, *Forth on the BBC Microcomputer*, also written by Richard de Grandis-Harrison, which is a complete introduction to programming with Forth.

J. P. BENNETT

Senior Languages Programmer  
Acornsoft  
Cambridge.

## Ill-will from . . .

I NOTE with interest your Sales Brief (Computer Weekly, March 17) that the Silent Night Company has selected a shop floor data collection system from BL Systems to track the progress of its mattresses.

A wise choice indeed. Who better than British Leyland to advise on the monitoring of somniferous activity on the shop floor.

IAN GOODWILL

Ben Electronic Services  
Henley-on-Thames  
Oxfordshire.

## The young ones

WHILE pop stars and tennis players continue to get younger year by year, an odd reversal seems to be occurring among high technology pioneers. Clive Sinclair, young businessman of the year at 42? (Computer Weekly, March 31).

I suppose I should, at 34, be relieved to learn that I am really a logical napper-wearer though physically going white on top. Still they can't be serious, can they? Maybe in a few years they will choose Ian McGregor.

GRAHAM BROWNLOW

Croydon.

## Graffiti

CHAD's piece on the dial-a-becane-telephone-call service offered by the US phone network reminded me of a bit of graffiti in a local callbox. For a good time dial 123.

Try it. You'll get all the aecs you want.

J. KELLY

London SW19.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics.

## Who is John trying to kid?

WHO does Laurie John (producer of the Horizon programme - Better Mind the Computer) think he is kidding? He is reported in Computer Weekly (March 31) as defending his programme by saying "I was anxious not to make any comment from myself, the commentary was very deadpan".

As a TV producer, he knows better than most that the choice of material and the way it is presented are at least as important as any spoken commentary.

And the message put over by

this programme as a whole was misleading and inaccurate. For example, the INTERMIST-1 program for medical diagnosis (Pople and Myers, University of Pittsburgh) was presented as though it was a fully developed system in daily use in a number of hospitals.

During a visit to Pittsburgh last summer, Prof. Pople emphasised to me that this system (although capable of an impressive performance in its domain) was still just a research tool and that a great deal

of work had to be done before one of its successors could be made available for widespread use.

Now the commentary may not have said that the program was in general use, but the accompanying pictures most certainly gave that impression.

So let Laurie John remember that "the medium is the message" - not just the commentary. And let him get the message right!

DR J. R. W. HUNTER  
Lecturer in Computer Science  
University of Sussex

## Flexible computer studies

I AM writing to provide information further to Dr P. J. Wright's advice (Computer Weekly, March 17) to school-leavers and careers advisers on flexible study.

At Oxford Polytechnic we have for over 10 years offered Computer Studies as part of a flexible "modular course" leading to a BA or BSc Honours degree. Students in their first (qualifying) year are encouraged to undertake study in three areas, each of which falls within a separate field of study. During their second and third years, students then follow further study in two of these fields, that

contributes to their degree classification. Students are also encouraged to reconcile their two fields by means of an interdisciplinary project taken in their third year.

It is currently possible to combine the Computer Studies Field with one of twenty three other fields, including such diverse subjects as: accounting and finance, biology, cartography, catering, education, geography, German language and literature, mathematical studies and psychology.

Students presently combine

nine modular credits in each of their two fields with three other credits that can be taken from other unrelated fields, to attain their degree classification which is based on the best 18 of their 21 credits.

Graduates leaving the Polytechnic are able to apply for posts in their two main areas and in addition, any of the connected subsidiary areas, a prospect that many employers find attractive.

A. G. TAGG  
Field Chairman, Computer Studies  
Oxford Polytechnic

## Flashing dangers from the cursor

THE dangers referred to by Mr Woodnick (Letters, March 31) may be even wider ranging than suggested. We are collaborating with a West German software house which has itself worked together with medical institutes that country to look into the ergonomic problems associated with screen displays, and the user aspects of microcomputer software in general.

Findings have indicated a correlation between cursor rate and brain rhythms. Too high a rate has led to symptoms of aggressiveness, and too low a rate to feelings of depression.

There are a number of other factors involved in producing screens which both limit undesirable features and enhance operator comfortability. Whether a government commis-

sion is the best vehicle for an investigation is questionable, however, since there is a lack of widely accepted evidence. One of the universities might well be interested in setting up a study with the aid of government funds.

We would be glad to co-operate in such a study.  
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## WORKPLACE

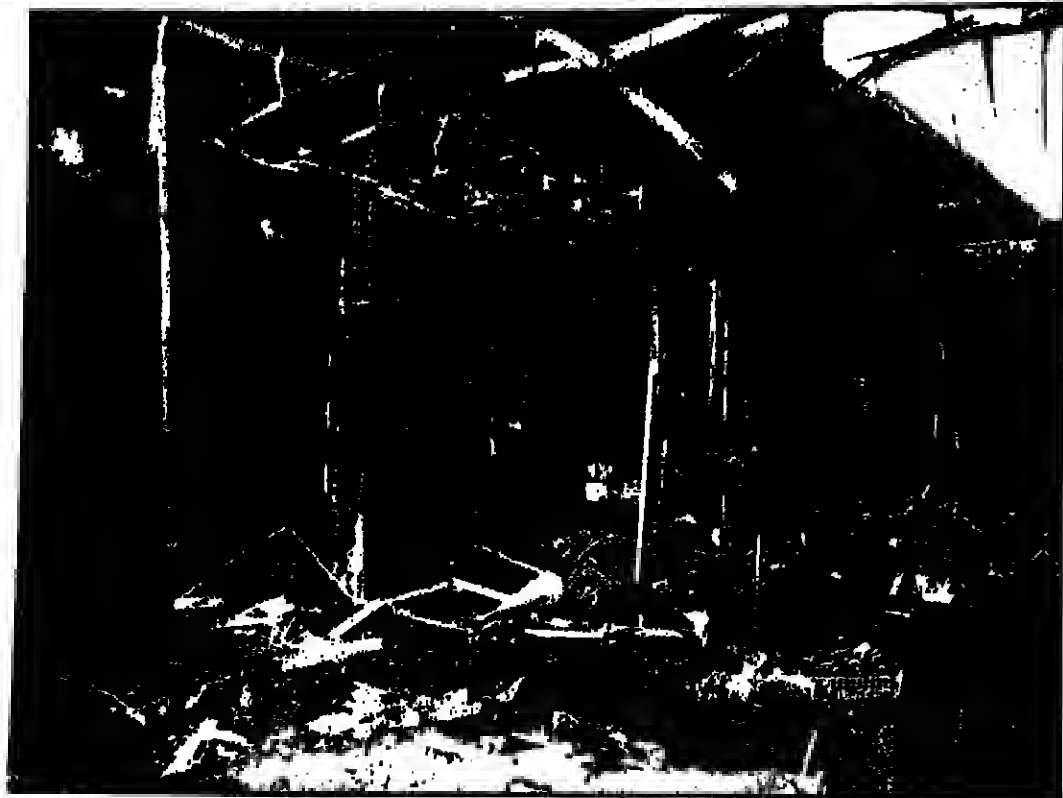
## The £5m IBM site nobody wants

ONE way to insure against fire, flood or strike action at computer sites is to have an identical system waiting somewhere else to take over at a key stroke. But this is not on fire a £5 million IBM mainframe installation.

To exploit this truth, a new £5 million project called Failsafe was announced last month by BL Systems and Atlantic Leasing, offering companies a share in a big IBM 3033 AP installation complete with full back up and peripherals.

Customers are offered four levels of cover, from £40,000 to £120,000. For the higher price, full use of the installation facilities is offered, with immediate transfer of computing services in the event of disaster. Advice on the telecommunications needed is offered for all levels of cover.

Already one full share in the Failsafe installation has been sold, to the Guardian Royal Exchange (GREX) at Lytham near Preston.



DISASTER... Where could you go from here?

"We needed the full cover because we've got all our network to protect," says Jolin Fitzpatrick, a hardware manager of the company.

GREX has previously relied on an unequipped cold restart/recovery service, which would have taken several weeks to get up and running. "We never had to use it,"

says Fitzpatrick.

A share in Failsafe has also been sold to Multipart, a wing of British Leyland, no doubt partly because of the link with BL Systems.

## Disabled checks get exciting

MICROCOMPUTERS have transformed testing of the mental and physical faculties of handicapped people, but two big problems remain: the tests are boring, and the results are too dependent on the way the tests are carried out.

But Middlesex Hospital's James Thompson believes boredom can be reduced taking a cue from video games, and he pointed to the Royal Hospital and Home for Incurables in Putney, which has pioneered much of the work on computerised psychological testing.

Improved sound effects, better graphics and built in reinforcement and reward are needed to motivate the patient, said Thompson. Ultimately the effective test will operate without supervision, like a computer game.

Automated psychological testing, known as APT, has become an accepted way of measuring mental or physical deterioration caused by brain damage, multiple sclerosis or old age. Many patients suffering these conditions cannot talk or hold a pen, and psychologist Sarah Wilson last year won a prize for developing a simple terminal with large keys for

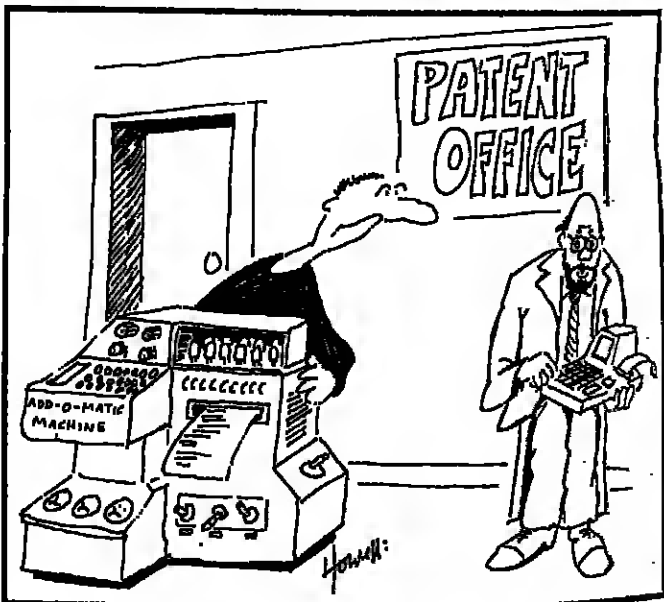
patients to respond to simple prompts.

Common tests include automated digital span in which patients are asked to key in series of digits displayed on the screen. Memory for words can similarly be tested, and Wessex Neurological Centre, Southampton, has developed a portable testing device that measures memory for faces.

More advanced tests have also been developed. Middlesex Hospital Medical School has applied artificial intelligence techniques to assess personal relationships. In the fashion of so-called expert systems, the school has tried to implement the types of questioning used by psychologists on the computer, and have the system develop the interrogation according to the answers given.

Another new development is the use of the computer to write psychological reports and make decisions about what further tests might be necessary.

The Apple micro is particularly favoured for psychological testing, partly because of the interest the company has shown. Apple sales people have been wont to turn up for conferences on the subject.



## One way to make tax returns less taxing

ONE obvious application of home computers is the annual conundrum of income tax returns. That few outfits have cottoned on to this software hole is probably due to the changing nature of the way tax is calculated.

But a small Woking consultancy is having a go with an income tax consultant on cassette, available by mail order, with a manual, for £24.94. The package, called Microtax, was written by Anne Lavies and Gordon McClure, who run the Tax and Financial Planning consultancy.

Microtax is aimed at small companies to guide them through the tax return form. Lavies describes it as a primitive expert system, taking the user through the form step by step asking questions and then advising what to put in each box.

What Microtax does not do is calculate how much tax the company owes for the year. A package to calculate taxable profit would fill up another cassette, and Lavies expects to announce this in the autumn.

Unfortunately Microtax will only last a year, because tax rates, but the fundamental basis of the tax calculations change with each budget. A new Microtax will have to be announced every year.

Microtax runs on the Sinclair ZX Spectrum 48K machine, the Dragon 32, Vic 20 with an extra 16K Ram pack, the Commodore 64 and the Pet 4000. "Basically you need 32K to get it to run," says Lavies.

It consists of 11 programs on each side of the cassette, all of them reading the same data.

Workplace is compiled by Philip Hunter

## PUZZLER

If you look at a table of squares you'll find that 218089 and 219024 are listed consecutively. What is the next square in the list?

The puzzle can be done quite easily without recourse to pencil or paper. See page 53 for the answer.

## PEOPLE



Michael Bagge, (above), sales manager of Turnkey and Applied Computing Systems, has joined the company's development team to market its Ships systems. Ships is a hardware and software package which handles a range of integrated management control operations for import and export movements. He was formerly with British Olivetti.

Mike Brittain has been appointed general manager at BCS Microsystems. He has been with the company three years, latterly as product manager.

Alex Ash has joined Newbury Data Recording as European distributor sales manager. He was previously with Stag Terminals and Anderson Jacobson.

Sintrom Electronics has appointed Steve Sawkins as product specialist for the company's microcomputer product group. He was with PCD Data Capture for five years as product marketing engineer before joining Sintrom.

Gould SEL has announced the opening of new sales offices in Birmingham, to be run by Midlands area sales manager Neale Wade. Wade formerly held a similar post in the Midlands with Geest Minicomputers. New office address is: The Coach House, 95a Hagley Road, Edgbaston, Birmingham. Tel: (021) 454 3099.

Andy Day has been promoted to commercial manager of the CAE group. He was formerly a systems sales manager. Two other promotions at the company - Mark Hatton from manager of numeric control products to UK sales manager terminal products; and Dave Taylor, from Southern region sales manager to UK sales manager, data products.

Fortune Systems has appointed Grenville Edwards as manager technical software support. He joins the firm from Bell Laboratories, where he was a technical development programmer. Manager for applications software support is Graham Howard, who was previously systems development manager at Olympia International.

Mike Borshell has been appointed marketing manager for Triumph Adler UK's TA1600 range of 16-bit micro and minicomputers. He was previously with Philips Business Systems for nine years.

Don Hazel has been appointed manager of Lesco Software's Central Government and Nationalised Industries Group. He previously spent six years with the Littlewoods organisation.

Tandata Marketing's team has been strengthened by the appointment of Keith Allan as technical manager. He was previously in an equivalent post at Zycor.

Martin Hole, a main board director of Duncan Bransom, has been appointed managing director of the company's mini and micro systems division. The division, formerly called Duncan Bransom Minicomputers Ltd, is now to be known as Duncan Bransom Office Systems Ltd.



Michael Meehan (above) has been appointed managing director of Perkins-Elmer Ireland. He replaces Stephen Maluda in accordance with the company's policy to appoint an Irish National to the post. Meehan was previously managing director of the EI Company in Shannon, Bire, where he worked since 1967.

## COMPEC DIARY

THIRD party suppliers - dealers, distributors, OBMs, systems and software houses - get their own show and conference from April 26-28. The Computer Trade Show and Conference, to be held at the Wembley Conference Centre, has attracted several big names, among them Gresham, Lloyds, Kodak, Logica, Norak Data, Tamsys and the Welsh Development Agency. The show is previewed on pages 18 and 19 in this issue.

Compec Scotland is this year attracting many first-timers including British Telecom, CAE Group, Digital Equipment, Funco Computer Products, GEC Computers, Grundy Business Systems, Olivetti, Hewlett-Packard and the Livingston Development Corp. Joining them are such companies as Rascal Milgo, Trend Communications, Hytec

Microsystems, Control Data, Codex UK and Cifer Systems, who are using the regional Compec for the second year running.

The Scottish show is to be held at Kelvin Hall, Glasgow from May 17-19. It is - along with its Welsh and Northern Equivalents - a spin off from the UK's premier computer show Compec UK.

Compec North is scheduled for June 21-23 and the venue is Belle Vue, Manchester.

New exhibitors for Compec North include DEC, Ericsson, CACI, Olivetti, Zenith Computer Systems, Perkins-Elmer and Alpha Business Computers.

All exhibitions are backed by some of the computer industry's top journals. Computer Weekly, Computer Talk, Systems International, Practical Computing and Software.

Details on all shows on: 01-643 8040.

## DIARY

APRIL 18 Databases - will they ever be available to the end user? BCS Hampshire branch, Mansfield Theatre, Southampton, 7.30.

Visit to Orton Airways at East Midlands Airport, BCS Nottingham branch. Visit will be combined with branch AGM. Details from Howard Tinsman on Kinoulton 2000 ext 277.

Visit to the South of Scotland Electricity Board. BCS Scottish WP & OA Group. Cathcart House, Spean Street, Glasgow.

Details from Catherine Young, Department of Office Organisation, University of Strathclyde, 173 Cathedral Street, Glasgow.

APRIL 19 The past, present and future of word processing. BCS WP and Office Automation Specialist Group. Prudential Assurance, 142 Holborn Bars, London EC1, 5.30.

APRIL 20 Advanced workstations. BCS Data Communications Group. Chemistry Theatre, Birbeck College, Malet Street, London, 11.00.



Jon Bennett (above), has been appointed director of Database Systems, the UK subsidiary of the American firm Database Systems Corp. He was previously sales manager with Memory Computer Services.

ITT Microcomputer Systems, part of ITT Consumer Products, has expanded its sales and management team to include five more executives. They are Barbara Primrose, formerly applications analyst/programmer, now software evaluator; Vivienne Harley, a newcomer to ITT, who is Northern area manager; Bob Harley, also new at ITT, who joins as Southern area sales manager; Sam Basu, formerly with Modular Office Systems joins as hardware engineering manager; and Brian Ward, previously a freelance consultant, is the new application software manager.

Currah Computer Components has appointed three members of staff to strengthen its development team. Mark Anson was formerly with Nine Tiles, where he was in software development; Alan Jones was previously at Sheffield University, where he worked after graduating from there with a B.Eng. degree; and Malcolm Beade has joined Currah from a Darlington engineering company.



Inventor of ICL's information processing architecture (IPA), Gordon Peake, (above), has joined Rediffusion Computers as board technology director. He takes over a technology group of about 70 people to bring on more products and strengthen the company's existing computer line. His experience in computer architectural bridging and networking strategies began with Honeywell, working on the task force that developed the firm's ISO-based distributed systems architecture, and later with ICL. Peake left ICL in May last year to join Computervision as support manager for Europe and had been working on establishing a European CAD/CAM development organisation when he was approached by Rediffusion.

## The AJILE isn't just another 16 bit micro!

AJILE is the most powerful portable microcomputer available in the U.K.

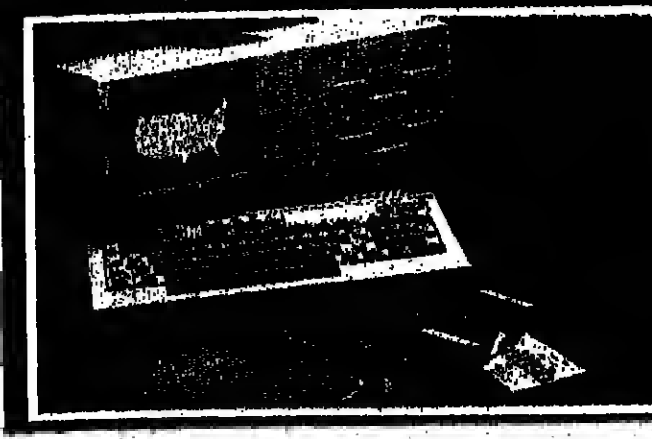


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# Computer staff maintain their pay levels — and expect to earn more

An NCC/Computer Weekly survey found computer staff had cause for optimism about their pay

THE good news for computer staff is that despite the continuing effects of the recession they have maintained their pay position and have brighter hopes than most.

This piece of good cheer emerges from the 1982 salary survey conducted jointly by Computer Weekly and the National Computing Centre.

In the year 1981/2 pay rises in the computer industry varied on average between 7.4% for data preparation staff to 8.9% for database controllers.

Rises in 1982/3 are likely to be lowest for systems analysts at 5.5%, according to the survey, and highest for junior and trainee programmers at 7.1%. But the NCC's information officer Robin Gage hints that these figures could be underestimates.

"The high leaving rate and lack of training going on at present could combine to work in favour of established DP staff," he said. The implication seems to be that junior programmers currently earning around £5,500 will be pressing for big pay rises and if they are not satisfied will be moving on to new jobs.

Nearly a fifth of them opted to move on last year, with pay dissatisfaction being probably the

main cause. Stability was greater among better paid chief programmers and systems programmers — but even in these fields the rate of loss was more than 10%.

Meanwhile staff shortages were still running at a surprisingly high level for a country with nearly four millions unemployed. DP managers were complaining of a 7.8% shortage of programmers and a 5.7% shortage of analysts.

The lack of senior analyst/programmer and network controllers was also above 8%. The deficiency in training was indicated by the fact that only 27% of firms were employing junior or trainee programmers, whereas 59% were using trained programmers at some level.

Firms had taken on nearly a third of their programming trainees during 1982, but at the same time had lost almost a fifth of them in the same period.

A generally declining trend in percentage salary increases — in line with the general national movement of wages — is evident in the period covered by the survey. Rises between December 1981 and December 1982 were

Continued on page 17

JOB DESCRIPTION	Annual leave	Paid % overtime	Subsidised lunches	Company cars	Health/Life Ins.	Ann/prod bonus	VALUE OF PERKS (% of salary)
Head of management services DP manager	25.0 24.7	— 3	51 46	60 51	60 44	31 29	16 14
Chief systems analyst Senior systems analyst Systems analyst	24.1 24.1 24.0	12 15 31	46 58 64	26 12 4	36 45 21	23 32 18	15 16 12
Chief programmer Senior programmer Programmer Trainee/junior programmer Systems programmer	23.9 23.5 23.2 22.1 24.3	21 36 54 59 26	46 50 55 60 53	18 8 5 — 7	31 29 17 17 23	20 22 22 20 17	11 15 11 10 12
Chief analyst/programmer Senior analyst/programmer Analyst/programmer	25.5 24.7 23.8	15 17 45	40 28 47	16 2 1	38 30 34	6 14 25	6 6 8
Network controller Database controller	24.5 24.6	61 14	44 39	7 9	32 33	24 9	10 7
Operations manager	23.5	25	51	17	40	22	10
Shift leader/senior operator Operator	23.1 22.7	72 70	52 42	— —	23 16	21 22	10 10
Data prep supervisor Data prep staff	23.2 22.4	55 66	47 44	— —	20 20	26 20	7 9

Table 1: Percentage of staff who receive perks

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## Computer staff beat the recession

JOB DESCRIPTION	Increases paid 81-2	Actual (Dec) 82 salary	Increase forecast 82-3
Head of management services DP manager	7.7% 8.5%	16,058 12,811	5.7% 6.3%
Chief systems analyst Senior systems analyst Systems analyst	7.9% 8.1% 8.2%	12,760 11,729 9,730	5.9% 5.8% 5.5%
Chief programmer Senior programmer Programmer Trainee/junior programmer Systems programmer	8.1% 8.4% 8.5% 8.8% 8.2%	10,620 10,033 7,674 5,508 9,916	6.6% 5.9% 6.0% 7.1% 6.1%
Chief analyst/programmer Senior analyst/programmer Analyst/programmer	8.0% 8.2% 8.4%	11,244 9,845 8,083	5.6% 5.9% 6.1%
Network controller Database controller	8.8% 8.9%	9,083 10,084	6.2% 5.7%
Operations manager	8.3%	9,906	6.2%
Shift leader/senior operator Operator	7.8% 8.2%	7,788 5,914	6.0% 6.1%
Data prep supervisor Data prep staff	7.7% 7.4%	6,053 4,658	6.0% 5.9%

Table 2: Results of the survey.

From page 16

around 8.9%, compared with 9.10% over the previous year.

Managers are predicting slower still rises in 1982/3 — of the order of 5.2% to 6.2%. But actual rises reported this year have turned out to be about 1% above what was forecast. This leads the experts to think that the 5.2% to 6.2% figures could be on the low side — it could turn out to be 7% to 7.2% instead, if managers feel pressures of high turnover and lack of experience in their departments.

But the report has its statistical limitations — as only two years were surveyed, it is not safe to deduce definite trends from the data available.

Regional variations are hidden behind the national figures given in the report. For instance, the national average for data processing managers is given as £12,800, compared to London's average of £14,600 and the North's £10,900.

Similarly, salaries depend heavily upon the size of the department involved and therefore the burden of responsibilities. Managers in charge of five staff or less earn only £10,700, whereas those with 35 or more to look after get around £16,700. Variations about the norm are also striking, with 2% of DP managers getting £11,000 or less, while 29% earn more than £14,000 — it seems to be payment on merit, rather than a set rate for the job, at least so far as

managing directors and their board members view the role.

Lever variations can also be detected lower down the scale, with 38% of trainee programmers receiving under £5,000 a year, while 31% of their colleagues took more than £6,000.

In larger departments it is not only the boss who benefits — programmers and operators can also expect to earn more there.

Staff in private-sector departments seem to fare less well in terms of salary than their counterparts on the public side. DP managers were getting only 97.4% in private industry and operations managers 97%.

But these figures could be distorted by the different sizes of departments and varying loads of responsibility. And perks apparently redress the balance, in some cases making private sector employees better off. For instance, senior systems analysts in private firms only get 99.5% of what those working for the government do. But fringe benefits push their total remuneration package up to 102%.

Estimating the value of perks is a very subjective exercise, the report admits. OP managers were asked to make an estimate for their staff, which reveals that perks play a very important role, though its scope is necessarily uncertain.

The value of perks reported in terms of percentage of salary varies from around 5% up to as much as 16% — across all grades of staff 10% of salary appears to be the average value.

Most common add-ons to pay were: paid overtime; subsidised lunches; company cars; health/life insurance; and annual or productivity bonus. Each of these extras is provided by more than 40% of employers to at least some of their employees. Only 5% of them give preferential loans or mortgages. A fifth offer non-contributory pensions for some of their personnel.

Most significant in this respect is the growth of the company car provision among computer departments. Among heads of management services and DP managers there has been a slight rise: from 59% to 60% in the former case and from 49% to 51% in the latter.

But chief systems analysts, operations managers and analyst-programmers have been doing much better.

On the "chicks", 26% now have company cars compared to 22% last year; of the operations managers, 19% compared to 9% of analyst-programmers, 16% compared to 9%.

More than half the installations surveyed worked only one regular shift, with 28% working two and only 7% working three. Shift-working was overwhelmingly concentrated in the operator and senior operator category.

Average shift payment was 17%, with 14% of employers giving 10% or less and 5% of employers offering 26% or more. For the minority of installations giving a flat sterling rate the average was around £750 a year.

Holiday entitlement improved slightly for less well-paid people — the average was between four and five weeks and gained about a day during the period, mostly at the bottom end of the scale.

Data preparation staff still outnumber all other groups in the industry, accounting for 26% of staff. Operations staff contribute 22% with programmers third at 21%. Newest job title is that of database or network controller which makes up only 1% of the computing workforce; these are the people now most in demand and they are likely to grow fastest in numbers over the next five years.

Operations and data preparation staff will continue to decline in numbers gradually.

Overall, 9% more jobs are expected in two years' time. But managers have failed to take action to prepare for the upsurge in demand. Only just over a quarter of installations have been training new programmers. Leaving rates were slightly faster at 13% than joining rates (12%); but the key specialists were leaving at an even faster rate, despite the general sluggishness of the economy. DP departments now spend around 40% of their total budget on staff salaries.

The postal survey, carried out in December 1982 and January 1983, covered a random sample of 350 installations drawn from the NCC's national computer index. Pay details were culled from 6,500 people.

Copies of the full details can be obtained from the NCC, Oxford Road, Manchester M1 7BD.

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The high leaving rate and lack of training going on at present could combine to work in favour of established DP staff.



Staff shortages still leave computer rooms sparsely populated.



This man could earn more for this in the south than the north.



# Brand new show with all the right credentials

Margaret Spooner talks to some Trade Show exhibitors

THE Computer Trade Show will take place for the first time from April 26-28 at the Wembley Conference Centre. The organisers emphasise the quality of visitors rather than quantity, and intend to provide an atmosphere conducive to business undisturbed by nattering crowds.

Visitors to the Computer Trade Show '83 will be dealers, distributors, OEM firms, software houses, retailers and other sales organisations involved in the computer industry.

Manufacturers of small computer systems, software, peripherals, magnetic media storage cabinets



and power supplies will all be there.

Many exhibitors at this first Computer Trade Show will just be there to give it a try.

And Tony Beddingfield, commercial director of Baydel includes his company among them. "Basically, you try it and hope for a good response. We tried Compac the first time and were surprised and pleased with the response and have been to every one since."

The company started by manufacturing controllers for discs, but now offers a range of DEC-based products extending from low-cost Winchester and floppy disc

systems to complete multi-user minicomputer systems.

Beddingfield said: "It's a new show which seems to have the right credentials for addressing the middle market between the small single user and the very large volume OEMs. The marketplace is changing. A few years ago there were mainly large OEMs but now there are many smaller OEMs requiring a higher level of service from the supplier. We anticipate this show will meet that market."

Gresham Lion will be showing its Lynx range of visual display terminals which come in three versions - standard monochrome, monochrome with graphics, and a colour graphics version.

"We decided to give it a whirl", said sales manager, Robbie Robinson. "It's a new show and the only way to evaluate a new show is to try it. The cost of media advertising is high. At the Computer Trade Show, for only a couple of hundred pounds more than the cost of a full-page colour advertisement, you get three days face to face with the people you want to talk to, so it is much more cost effective."

He added that Gresham Lion was looking for large OEMs "which is what the show is aimed at".

Integrated Micro Products was planning to exhibit at the Microsystems exhibition which was consolidated with the Computer Trade Show. "We were geared up for that exhibition so we decided to go to the Computer Trade Show", said Dick Penny, marketing manager.

The company was formed a year ago to manufacture the IMP-68 which is based on the Motorola 68000 processor. The basic multi-

user system includes 256K memory, a 10-Mbytes Winchester disc drive and one Mbyte floppy disc drive, runs on Whitesmiths' Idris operating system and has full C and Pascal compilers.

The machine has been selling to government research laboratories, university computing departments, and software houses but with optional software can now be used for business applications through to engineering development.

Starting at £7,500, the machine is equivalent to a DEC PDP-11/44, said Penny. Various configurations will be on show, featuring for example high resolution graphics and a large capacity disc drive.

If the Computer Trade Show '83 was conveniently timed for Integrated Micro Products it was conveniently located for IEM which is based at Mill Hill, a few miles from Wembley. Jim Fisher, an IEM director, said: "A fair amount of our products are sold through other trade outlets. We had a lot of trade enquiries at Compac and the Which Computer? Show but this is the first trade show at which we have exhibited."

On the computer side of the company's main business is servicing microfilm and microfiche equipment but it also manufactures and markets a range of VDU pedestal and tilting turntables, sells anti-glare screens and a range of magnetic media storage files, and distributes Rhone-Poulenc floppy discs.

"At the show we will be looking for more dealers," said Fisher. "We set no limit on the number."

Richard Norton, marketing director of Norak Data, regards going to a show for dealers, OEMs and the like as a "new kind of

sport." His company exhibited at a previous trade show in Birmingham last year but found it undersubscribed. "The Computer Trade Show looks particularly suitable to us. It's in a good location - London is usually very successful. By exhibiting here we will gain more information before we exhibit for a second time at either."

Norak Data manufactures 16- and 32-bit minis and at the Computer Trade Show will feature one of its satellite machines which is for up to nine users and will fit under a desk.

Norton added: "As a company we want to concentrate on the highly utilised products such as word processing, communications and database which all customers can use. For applications software we would like to use OEMs, software houses etc."

He said Norak Data had had some successful links with software houses in the past - with the Norcontrol and Norconsult systems for shipping and banking from Norway and with Singer-Link on air force and flight simulation systems. "But we'd be happy to meet smaller companies which are just starting out."

Some exhibitors have more specific reasons for taking part in the Computer Trade Show, the most common being to launch new products and/or seek dealers. One company which is present for both these reasons is Modata Computer.

Tony Eden, general manager of Modata, said: "We have a new product from America to launch,

instead of doing one-off, if we researched and designed various configurations then we could meet customers' needs from stock models."

The Cheshire-based company hopes to make contacts within the trade field at the show, for example with software houses to become its agents as it builds up its business.

Robocom will launch the Robo 1000, a major upgrade of its existing systems. Managing director Peter Bailey said: "We would like to make dealers aware that there are low-cost computer-aided design machines available for microcomputers and that this is an area they may like to deal in. Priced at £445, the Robo 1000 combines a controller and software with microcomputers in small systems."

Bailey said: "It dramatically expands the applications area to which low-cost computer graphics can be put." It will be the main product on Robocom's stand.

Geveke Electronics will also launch a new product at the show. General manager Tony Beswarick said: "We specialise in the distribution of a full range of peripherals to dealers, integrators and OEMs. We are interested in the show because it is a trade show, the time of year is right and it coincides with the release of a new product." That product is the latest addition to the company's range of visual display terminals.

Beden said: "We believe it has a large potential because it is a true multi-user system for microcomputers. It will be the main feature of our stand but we will probably also show another new product - a daisy-wheel printer costing less than £1,000."

The company also distributes Torch Computers, Digital Research microcomputer peripherals and Gresham Lion visual display terminals.

Another company with new products to display is Real Time Computer Systems. Tony Swain, sales and marketing manager, said Real Time Computer Systems had been dealing with blue-chip companies on larger peripherals and system components for seven years but had chosen the Computer Trade Show to provide a first exhibition of its own microprocessors and microcomputer systems. The RTCS 8M and 88M are based on an eight-chip memory board giving 64 Kbytes of memory. One model uses an 8in disc and the other a 5¼in disc.

A third RTCS machine, the Hydra, was recently launched and will also be shown; it incorporates a Winchester disc and varies in capacity from 10 to 40 Mbytes.

Swain explained that Real Time Computer Systems had over the years produced a number of one-off machines to meet customer requests, a demand which grew out of its business of producing parts such as power supplies and various circuit boards. "We decided that

we must get dealers. This exhibition has come at the right time for us."

The new product, MicroMaster, from the US company Novell Data Systems, is a network microprocessor. It is said to provide network working of any 280-based personal computer and a number of others without modification to software, and it has a database capacity of 20 to 120 Mbytes. Modata is seeking dealers for MicroMaster.

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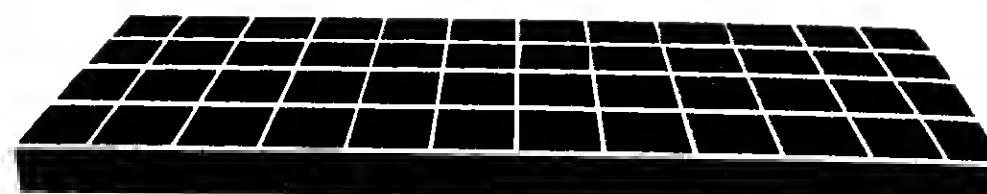
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## The Computer Trade Show '83



the Visa 50, at the top end of the range.

Beswarick said Geveke Electronics would be exhibiting at many of its products as possible in the space on its stand, including a range of low-cost matrix printers made by a major European manufacturer and, under a recent agreement, being marketed in Britain under Geveke Electronics' own name.

He said the range should be of particular interest to trade buyers involved in desktop computers for the first level of business entry. The company is also the largest European distributor for Diablo printers.

Terminals and printers will be among the exhibits on Mellorata's stand too. The Colchester-based company markets a wide range of video terminals for DEC.

Continued on page 19

# It's the quality, not the quantity that counts

From page 18

Data General and IBM users. The Data General Colorscan 70 which gives Data General users up to eight colours simultaneously, emulations for DEC VT100, VT101 and VT131 terminals with colour graphics facilities, for Data General DG100/200 and DG605/253 with full colour options, for IBM 3275/75, ADDS Regent 25, Hazeltine 1420 and Lear Siegler ADM 3A terminals.

Mellorata has also expanded into printers and markets Oki

Data Efficiency, the exclusive distributor for Kaga monitors, will feature the latest RGB colour monitors including the high resolution Vision III version, which has a switchable interface to make it plug-compatible with Apple, IBM, BBC and most other microcomputers. The company is a large distributor of peripherals and hardware for microcomputers.

Two companies whose primary aim in exhibiting is to find dealers for some of their products are Logica VTS and Dynatech Microsoftware.

Logica VTS, one of the Logica companies, was formed in 1976 to research, develop, manufacture and supply office automation and communications systems. Its three main product lines are the 2200 word processor, the Polynet local area network and the Vitesse personal computer. The company has already shown the Vitesse at two previous computer shows, but on this occasion wants to put it before the trade.

Marion Lewis, Logica VTS marketing operations manager, said: "We have now signed about 20 dealers. We are aiming to complete a network of 50 by the end of June - one has to vet and select carefully to get the right quality of dealer."

Dynatech Microsoftware is



based in Guernsey. Its sales administration manager, Diana Knott, said: "We have tried selling direct and through dealers, and we feel that the only way to succeed is to get a good network of dealers going for UK distribution."

The two-year-old company, which was called Microsystems prior to takeover by Dynatech, produces program generators and software.

"We are mainly interested in



getting dealers and distributors for our program generator. Codewriter. We have already appointed some area distributors but are seeking more to control the network of dealers." Codewriter is available for the Commodore 8000 and a version for the IBM Personal Computer will be launched at the show. Versions are being written for the Commodore 64 and ATC Sirius computer.

A very different type of software will be evident on the stand of Microcomputer Games, the sole representative of companies applying computers to fun pursuits rather than business. Microcomputer Games sells board, war and fantasy games and will demonstrate some of them on an Atari 800 and possibly a Commodore 64. While this may appear diverting in the middle of a sea of business equipment there can be no mistaking the serious purpose behind Microcomputer Games' presence at the show.

Michael Blood, the company's general manager, said: "While it's billed as a show for the business software trade, a lot of business software companies have been

discovering another lucrative area which at first seemed beneath their dignity but is proving very profitable."

"It's a trade show and we are there to show them a way to make money. Although it's a bit of a gamble for us I think we'll get a lot of interest."

And for anyone hoping to relax with a game of space invaders? "We'll charge them for that," quipped Blood, intent on three days of good business.

Galatrek International is also hoping for brisk business in the shape of potential customers for its electrical power supply control equipment. It will show the Galatrek Voltfilt range of solid state active filters for the first time, plus the Voltstab range of voltage stabilisers and the Galatrek range of uninterruptible power supply units. The latter provides voltage and frequency stabilisation, spike and noise control and mains fail warnings. Galatrek sells to end users but is interested in meeting manufacturers wanting to install their devices as original equipment.

John Phillips, the Welsh Development Agency deputy controller of information, said its aim in attending this, as any other show, was to attract companies to Wales. "We will show, photographically, the attractions of Wales both from a business and leisure point of view. We will show the type of factories available and the quality of the lifestyle in Wales."

But there may be computers as well as photographs on the Agency's stand - the products of two companies which have made the move to Wales. Torch Computers has opened its UK manufacturing

headquarters in a 25,000 square foot factory in Caernarfon and Dragon Data has a 50,000 square foot factory at Kenfig, near Port Talbot.

Whether companies continue to exhibit at the Computer Trade Show in future years depends largely on the success of this first event. But success is not entirely quantifiable in terms of cold statistics. There is more to attending such a show than merely generating interest in products or gaining a certain number of sales leads.

Tony Beswarick of Geveke Electronics commented: "We would like to feel that our invest-

ment in the show and the effort we put into it is rewarded. But such a show has a wider importance because the people there are the ones who determine trends in the marketplace. So there is a lot to be gained just from attending and being able to talk to these people."

Robbie Robinson of Gresham Lion mentioned also the side benefit of looking at the competition. In evaluating the success of a show, he said: "You get a gut feeling as well as looking at the number of sales leads."

At Peripherals '83 his company gained 60 sales leads and 180 other contacts and was well pleased. Last year at a show which was generally regarded as fairly unsuccessful Gresham Lion had one very large order which made it worthwhile.

In the end it is the volume of business generated which counts. "Normally we would expect about 50 contacts at a show," said Richard Norton of Norak Data. "At this one we'll be satisfied with 20 because normally we are meeting end users, but this time it will be professionals." And the orientation of the show towards the trade gives it considerable appeal, judging by exhibitors' comments.

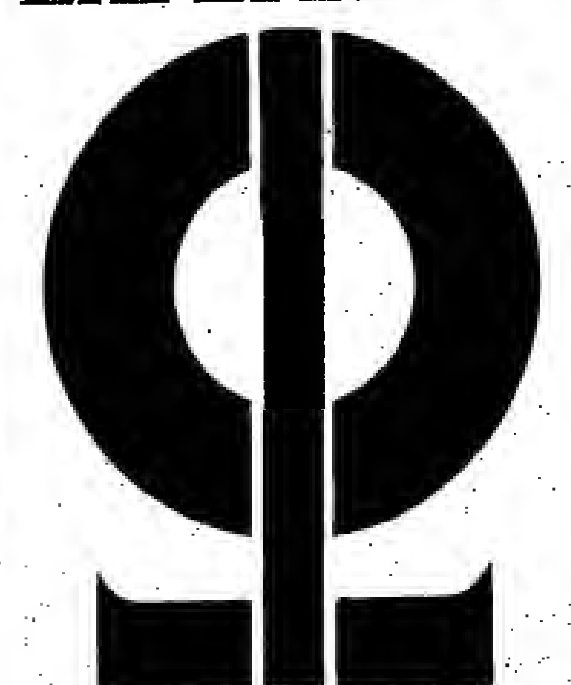
If it is well attended the Computer Trade Show could become an essential part of the marketing strategy of companies which supply the computer industry. Tony Beddingfield of Baydel said: "There have been several poorly attended exhibitions recently. We hope this won't be one."

His hope is undoubtedly shared by the other exhibitors while the organisers are sure to echo Beswarick's sentiment: "We are enthusiastic and hope the show will be a success."



BESWARICK... Show coincides with release of a new Geveke product.

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## THE OEM MARKET

# What car dealers taught the OEMs

While some manufacturers are bypassing OEMs and selling direct to end users, others are beginning to woo them back. Hedley Voysey reports.

THE motoring world is familiar with the sales techniques used to gain first rate dealerships. The same theatrical style has arrived in the computer market, as the importance of businesses which buy systems for further re-sale grows.

Unlike the motor dealerships sector, however, the majority of resellers of computers employ large numbers of staff to "tailor", "customise", "integrate" or otherwise transform the shell offerings presented by the manufacturing source.

To this extent the business of acting as a middleman in computer dealings by adding value most closely resembles the commercial vehicle coach-building trade, as in most cases the finishing stages added to the shell are very significant to the final user.

Where the systems houses supply a business applications product, however, there is no doubt that the art of wooing dealers is gaining the full presenter's treatment so familiar to the vehicle trade.

The latest (but not the first) manifestation of this style comes from Perkin-Elmer (PE) with its partnership plan. The glossy brochure which is intended to interest dealers in attending a seminar on the PE plan for supporting dealers is worded in the breathless style of "hit-and-run" copywriters searching for impact.

The deal is both "unique" and "mouthwatering" and the prime software product is "so choc-full of goodies" that it enables business applications to be produced in a fraction of the time - "and that's just a start".

On the other side of the coin there is a simple realisation among all systems houses that times are changing and that several major equipment makers are beefing up

their direct sales teams.

In theory the business done by these sales groups is effected with major accounts and actually improves the sales in other accounts because it creates a climate of general acceptability for the range.

That is to say it is meant to provide a surge of appeal which makes systems houses acceptable to potential clients anxious to deal only in the "first division" of the computing league.

Stuart Haughton, who is responsible for volume channels of sale for Digital Equipment, is

quite clear that "resellers gain most from dealing with a supplier using a foundation of design and support that is of the highest standard."

It is equally clear that Digital Equipment views many end-users as potential direct sales simply because the newer mixes of hardware and software, such as seen in office support systems, demand a good and sustained contact between ultimate user and ultimate supplier.

Needless to say, the factors at work in changing the allegiances of systems houses towards main equipment suppliers are not as simple as this introduction would suggest. It is not just that the established suppliers - to wit Digital Equipment and Data General - are getting greedy in the office automation market and therefore squeezing out some resellers.

It is also important that IBM is more active in most sectors of the game, including the newer ver-

sions of the 4300 series which are being routed to the top echelon of systems firms.

The story in more plain language is not uninteresting, in that Perkin-Elmer has decided that it is more cost-effective to spend cash on supporting resellers of its systems than to expand its sales force that sells direct to end-users.

While the main part of the selling story to resellers rests on the "very wide spectrum of available power, starting with a 32-bit system for about £22,000 and rising to process 20 million instruc-

tions per second" according to Brian Hanley, marketing boss for Perkin-Elmer, there are also financial incentives including advertising support, four months for phased payments and initial "start-up" systems at very hefty discounts.

For systems houses and other resellers there are difficult choices ahead. The largest firms can find the manpower to get under the skin of more than one range of machines; very likely handling four main sources of supply, but the investment in doing this is on a scale which frightens the bookkeepers in smaller firms.

Although there are financial inducements to ease the burden of acquiring know-how about yet another set of hardware and software options, these gains are dwarfed by the cost of the time spent in being certain about performance capabilities.

It must be remembered that fixed price tenders for jobs can

turn into loss sustaining nightmares when mistakes in tendering occur. So, any drive for additional distributing outlets, such as that mounted by Perkin-Elmer, meets with the inertia built into the medium sized systems houses because of the drag on profits created by investing in "getting to grips" with a new range of systems.

Pressure is also on systems houses to adopt a different level of systems integration by dealing with board-level computers and powerful packaged versions of machines from semiconductor sources. An example of the latter is the appeal of the Zilog 8000 while the proliferation of multi-user systems based on mixtures of 8-bit and 16-bit micro chip sets continues apace.

The Prime computer stance in fighting these trends is, perhaps, typical. The PrimeNet networking software is one of the leading reasons for systems houses to adopt the Prime series for distribution. George Kendall for Prime notes that it "is active in linking with oem partners based on a variety of tools for different environments which are each exceptional in their class."

The Prime offerings of financial incentives have undergone no radical change, but there is a continual flow of marketing ideas to present the systems outlets handling Prime to specialist areas of potential user interest.

In pronounced vertical markets, say, areas of the clothing industry, NCR is more active than many might think in acquiring resellers of its smaller systems. For systems houses converging an markets via semi-manufacturing operations, the 32-bit chip set introduced by NCR in recent months, looks attractive due to its ease of micropro-



gramming - which in terms of results means initiating instructions sets, automatic inclusion of communications software and aids to distributed database design.

If to all this is added the NCR dealer lists for the personal micro sales - the Decision Mate V - it can be seen that a general maturing of relationships is taking place all round the industry.

Data General also has a capability for appealing to systems builders in a number of guises, for while the major selling drive rests with the 32-bit machines, from the cheap MV 4000 upwards, the firm still sells packaged systems based on the 16-bit Eclipse instruction set and its component level products are sold through distributors for chips in the normal way.

A major account which shows what can be done when supplier and systems firms all pull together is probably in evidence in parts of the Grand Metropolitan Group for Data General in collaboration with Data Logic and Leasco.

Leasco provides another spotlight for trends in reselling machines in that it has a major deal with Grundy for the Newbrain. It will be interesting to see if Grundy can emulate the Altos track record in the US, where it rivals Vector Graphics in being known under its own name and also via resellers.

While the general tone of Digital Equipment's pronouncements suggest that there is room for all firms adding significant value to basic hardware and software combinations, the truth is that many applications believed to be very specialised, a few short years ago, are now regarded as a problem in managing the configuration of the software tools and a dash of seasoned expertise.

John Remington of Modcomp's industrial applications arm claims that "for many process based applications, the systems house can adjust for special input and output needs and connect to optimisation models, while our package provides the ready-made core of processing software" and this tends to leave Modcomp looking for specialists with instrumentation expertise and similar skills.

The industrial market has had a long acquaintance with Hewlett-Packard (HP) and the links are not likely to be weakened by current changes. The support for agents of HP equipment seems to be conventionally organised, but certainly embraces incentives for software as well as hardware.

There is little doubt, however, that large areas of office automation growth and many sites examining distributed processing designs will be served by Hewlett-Packard staff operating in the front line of negotiations.

If fundamental change could be judged by the amount of splash it caused, then it would seem right to observe that among 32-bit machine suppliers, there was indeed, a struggle for the allegiance of industrial expertise on offer from systems houses, with some of the contenders already mentioned here and others that are obvious, such as Gould SEL, and Harris, Computer Technology and packaged versions of the systems based on Intel and Motorola chips are then left to fight it out with Digital and Data General in the 16-bit sector.

But the truth is most probably that the splashing sounds merely mark the struggle for a peripheral sector of the market, while the central concern is to stop the battle between IBM and Digital Equipment from overshadowing every other policy decision made in the market - especially by large users.

IBM quarrels vociferously with every type of bus structure based computer, except at the smallest levels, while Digital Equipment calmly dials out variants of its 32-bit bus design, its Q-bus and its Unibus. Mostly Digital does this at each discernible level of systems building, from the chip set to the complete package.

To distract attention from the dominance of these two giants in policy determination the systems houses are turning more and more to policies based on Unix as a bonding technique between machine variants. As it happens the availability of Unix is now so widespread that many systems exploiting the newer features of its design can almost be said to be "portable" without putting a tongue in a cheek.

The resellers of computers have discovered the danger of undue dependence on popular hardware architectures, since the supplier of these can move in to take over sectors of the market, almost at will. It remains to be seen whether dependence on operating systems design features offers a better bet for resellers of hardware.

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HANLEY... "There are also financial incentives for re-sellers."



Boris Sedacca explains why the original equipment manufacturer isn't the original equipment manufacturer

# Why there'll always be a role for the OEMs to perform

TO people outside (and some inside) the computer industry, the term OEM is confusing, particularly as it does not refer to the original equipment manufacturer itself, but to its agents, distributors and systems builders.

The role of OEMs is changing all the time, but their origins can be traced back to the early days of the minicomputer when manufacturers like Digital Equipment and Data General sold processors to which other peripheral manufacturers' printers, terminals and disc drives could be connected.

A customer could of course buy peripherals from the minicomputer manufacturers but he would normally be paying over the odds because their strength lay in their specialisation in processors. In fact many minicomputer manufacturers buy OEM themselves if they want to offer total system configurations.

But there will always be a role for OEMs, as the example of CPU Peripherals shows. The company took over Hazeltine's UK operation last October because as a single product line vendor/minicomputer it was finding it difficult to keep going with its overheads.

**Big users know they can buy kit outside Digital Equipment, but they do not want to be told "you will have to talk to our distributor" when they want to place an order - we are the distributor and we take the order.**

"Off-shore manufacturers often adopt a policy where they set a minimum order level and cut themselves off from good margins at the systems builders level who want a simple deal and who do not want to commit themselves to large purchases. They normally want to try out three or four terminals to begin with," says Mike Ayres, CPU Peripherals.

"Big users know they can buy kit outside Digital Equipment, but they do not want to be told 'you will have to talk to our distributor' when they want to place an order - we are the distributor and we take the order."

Ayres claims that since the takeover, turnover for the Hazeltine business, which stood at £1.3 million a year, has increased by 50%.

"Some manufacturers, like Epson, for example, are going into their own local operation, but I think enlightenment will soon dawn. If a customer does not want a printer, the OEM distributor can sell him something else like a terminal or a disc drive. The sales OEM has more strings to his bow."

One current development in the OEM market is its encroachment into IBM territory. The plug-compatible manufacturers first attacked the mainframe end of the market with peripherals and then with processors, but now the small systems end is being flooded with numerous IBM Personal Computer look-alikes.

Moving upmarket a little into IBM System 34 and System 38 territory, once known as the General Systems Division, Decision Data believes this to be the fastest growing market and is aiming for a slice of IBM's peripherals business there.

According to Craig Ogilvy, sales and marketing director of Decision Data, there are currently around 100,000 System 34s and 38s installed worldwide. The company says it earns 60% to 70% of its revenue from the IBM GSD mar-

ket. The rest comes from maintenance and the sale of punch card equipment for which the UK market is small in the UK but still relatively buoyant in France.

Decision Data was set up in 1979 by four ex-Univac engineers who designed and manufactured 80-column punch cards sold OEM to Honeywell, Burroughs and ICL and also direct to end-users. The company got its first taste of PCM experience by hooking punch card equipment up to IBM System 360 processors and then began making 96 column punch cards for IBM System 3s which gave it a foothold into the GSD market.

As punch cards began to go out of fashion in favour of video terminals, the company's fortunes dipped in the mid-70s before picking up again with the launch of IBM-compatible terminals and printers for the GSD market in 1980.

NCR also appears to be preparing an indirect foray into the IBM plug-compatible market. Its recently-launched 32-bit single-chip processor, the 9300, will be available with the IBM System 370 instruction set implemented in programmable read-only memory



WAINWRIGHT... remains loyal to Texas Instruments, despite the lure of the IBM OEM market.

to make it compete against IBM's 4300 series midrange mainframes.

However, Phil Howard, NCR product manager for the 9300, pointed out that this would only be available at the chip set level for systems builders who wanted to go the IBM plug-compatible route.

So although the IBM market presents some potential for OEMs, many will prefer to stick to what they know best. One such company, Geest Computer Services, has remained loyal to a manufacturer which is very much in the second division as far as minicomputers go - Texas Instruments.

Geest has been selling Texas kit since 1977 and has notched up 200 installations, mainly in the UK,

but in the rest of Europe as well. Philip Wainwright, managing director of Geest Computer Services, contends that the Texas 990/10 mini is still a good bread-and-butter mini even though it has not followed the trend of other manufacturers to 32-bit processors.

"The new 990/10A will enhance the power of the machine by about 60%. Competition from the 16-bit micros against the machine at the bottom-end, that is in the £14,000 price bracket, is quite intense,

therefore we have to move upmarket with it. A £45,000 system however, is still competitive against networked micros.

"We happen to be in both markets. The advantage of a micro is that users can upgrade from a single terminal and floppy disc rather than having to put a lot of money up front on a minicomputer system."

The average Texas machine will have around seven to eight terminals and can take up to 40 devices online but cannot compete with top-end machines like Digital Equipment's 32-bit Vax mini, so about nine months ago we began offering Tandem NonStop systems for configurations handling upwards of 60 terminals.

"Since then we have sold three systems. One of our customers in the motor trade is upgrading from a Texas 990/10 to a NonStop system in October. This is a vertical market for us where we are using one package from the Phoenix, Arizona-based Applied Data Systems for both machines. We just swap out the processor and discs - the software is transparent to the user."

One company which relies heavily on vertical markets serviced by OEMs is Universal Computers (UCL). UK suppliers of the Honeywell Level 6-based Ultimate range running the Pick operating system. Pick was originally developed by Richard "Dick" Pick at Microdata and sold on Reality minicomputers by CMC, which sells direct to end-users, and particularly to local government in the UK.

UCL's approach is different, says commercial director Alan Wilson. "We buy from Honeywell and Ultimate, and sell through 20-odd dealers, distributors and agents. Our main distributors have

a ready market in eight vertical areas.

"For example, Consultants (Computers and Financial) sell systems into the stockbroking and investment market. City Computer Services sells into the Lloyd's insurance market, and Adserve sells into advertising agencies."

"This allows us better and quicker market penetration without the high overhead costs of employing a direct sales force. We have a Universal library of applications available to any of our OEMs, run joint advertising campaigns and share the funding. It is difficult nowadays to sell the hardware only - OEMs are

looking for a complete package including customer support which we provide."

UCL also provides information of the type provided by the major manufacturers to their direct sales forces, such as competitive information, technical bulletins, benchmarks, and order news.

"We are planning a serious move into Europe towards the end of the year in conjunction with Ultimat. We already have initiatives in Holland, Belgium and France, and with Honeywell's operations so firmly established in Europe for things like engineering support, we are in an ideal position to start marketing there."

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# How the term stretched to software

Phil Manchester on how hardware selling techniques crossed, inevitably, over to software

THE recent past has seen an unprecedented rise in the demand for software.

This has led to fundamental changes in the way that software is developed and, ultimately, the way in which it is sold. As long ago as 1968, the term "software crisis" was coined to describe the gap between the capabilities of the hardware and the software that could be used on it.

The seeds of the industry as it is today were in fact sown at about the same time when the hardware manufacturers, led by IBM, "unbundled" their software. Originally designed as a means for hardware manufacturers to increase their revenues, the unbundling gambit backfired by opening up the supply of software to independent companies.

Most packaged software houses that are now well established owe their beginning to this decision by the hardware manufacturers. As soon as software as such became a "product" as opposed to a service it was inevitable that all of the devices used to sell hardware would also apply to the selling of software.

It also has a significant number of customers in the software house market, using the CIS Cobol product to develop applications software including Action File and Sheffield Software.

It also includes Peachtree, the micro software subsidiary of the giant Management Science of America (MSA) software package company. MSA was one of the companies that developed out of the unbundling decision in the late 1960s and has worked its way to the top of the heap as far as independent software suppliers are concerned.

Peachtree, too, is in the OEM software business.

Managing director of Peachtree, John Hale, agrees with Hewitt's comment about distribution.

"We have to do it because of the sheer impossibility of handling the scale of transactions. The microcomputer business is an order of magnitude bigger than either the mini business or the mainframe business. Selling in the conventional way is impossible from the sheer logistics of support."

With one exception, Hale said

**The great advantage in selling to other software houses and microcomputer manufacturers is in distribution.**

So, in the same way that an OEM market has grown up around hardware suppliers through the 1970s, the demand for software has created a similar structure in the software business. Traditionally the term OEM - derived from the phrase Original Equipment Manufacturer - has come to mean a company that takes a raw product (usually a Digital Equipment minicomputer) and by adding value to it turned into something new.

Often this involves a certain amount of what has come to be known as "badge engineering" - in other words the only bit of value added to the original product is a new name.

When it comes to software, the term has to be stretched a bit to include licensing deals between software suppliers and their customers where the customer is using the software to perhaps sell another product like a microcomputer.

"We have tremendous difficulty with the term OEM," commented Peter Hewitt, marketing manager of Micro Focus, a company specialising in Cobol compilers and programmer productivity aids. "It has always meant systems houses but I can see how it is becoming relevant to our business," he went on.

The great advantage to us in selling to other software houses and microcomputer manufacturers is in distribution. There is no way we could serve a world market with only 75 people. But by extending our products into other companies we can make use of their sales and support organisations."

Micro Focus has a long list of deals with a diverse number of manufacturers covering the whole spectrum from Apple and Sirius through DEC's micros to ICL and Ferranti.

that Peachtree does not sell to end users.

"We do sell to corporate users of micros - the MSA type of customer moving into micros. But they are almost like OEM sales anyway because they are multiple sales," explained Hale.

Hewitt at Micro Focus commented that such sales were extremely important from the point of view of product development.

"When you are selling through distributors it's very easy to lose contact with your end users - you don't know who they are. We try and maintain a local base of customers to provide feedback directly. We need a proving ground to build up experience and insight into the product so we need to build our own customer base," he said.

Hale agreed that this was important and felt that Peachtree could achieve this through its contracts with its dealers and its corporate "end customers".

Operating systems software such as Unix and Digital Research's CP/M are obvious candidates for software companies developing and customer software for vertical markets. This is in marked contrast to the mainframe industry where manufacturers have shouldered the burden of responsibility for operating system development.

There are not a great number of independent operating system suppliers in the mainframe market - and those there are operate in a very specialist market.

The advantages of buying an established software package for distributors are numerous. Apart from the obvious advantage of not having to go through the traumatic business of actually developing the package themselves there are marketing and support advantages.

"We undertake to do much of the marketing for our customers,"

said Peachtree's Hale.

"This includes TV advertising which is due to go out this month and newspaper advertising."

Peachtree also spends a lot of its time on providing training facilities for dealers and also gearing its development to the requests of its dealers.

This is where the concept of OEM supply shows considerable differences to that applied to



HALE... "The micro business is an order of magnitude bigger than the mini or the mainframe business."

hardware. Whereas in the hardware market many OEM customers will apply their own mark to the product, in the software market there are positive advantages to keeping it very much in line with the original source.

"A distributor would be foolish not to take advantage of the marketing support we offer," said Hale. "But we would not exclude situations where a customer wants

our products to build his own." Hale sees the parallel with hardware OEM business very much in the way that the product is despatched from Peachtree.

"We ship master tapes and master documentation and the distributor handles the copying. We provide a licensing arrangement and benefit from royalties."

Another problem that can occur is end customers looking for

support from the originating company.

"We get people phoning us direct," said Hewitt. "This happened a lot with the Sirius users who had an early version of one of our products. But you can see the logic in it. We ship the product out to California, 6,000 miles away, it is repackaged and sent back - probably to an installation round the corner."

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- 10.30 What software should you sell? - It is tempting to go for the established products such as CP/M, Wordstar and VisiCalc, but is this the best route to success?
- 11.00 Who should you sell to? - Are vertical markets the way forward, or is a more general approach to marketing called for?
- 11.30 Support - how much should you give? - are cut prices and a cash and any status preferable to a comprehensive user support?
- 11.45 What a software house looks for in a dealer? - a leading software house explains its selection criteria.
- 12.15 Lunch
- 12.45 Dealing with the man in the street - a case study - High volume Low cost products may be right for you.
- 13.00 Selling into business - a case study - higher unit costs but no cash than the home user?
- 13.30 Dealing with the man in the street - a case study - High volume Low cost products may be right for you.
- 14.00 Selling into business - a case study - higher unit costs but no cash than the home user?
- 14.30 Dealing with the man in the street - a case study - High volume Low cost products may be right for you.
- 15.00 Dealing with the man in the street - a case study - High volume Low cost products may be right for you.
- 15.30 Dealing with the man in the street - a case study - High volume Low cost products may be right for you.
- 16.00 Close

### WEDNESDAY, APRIL 27

- 08.30 Registration and Coffee
- 09.30 What software should you sell? - It is tempting to go for the established products such as CP/M, Wordstar and VisiCalc, but is this the best route to success?
- 10.30 Who should you sell to? - Are vertical markets the way forward, or is a more general approach to marketing called for?
- 11.00 Support - how much should you give? - are cut prices and a cash and any status preferable to a comprehensive user support?
- 11.45 What a software house looks for in a dealer? - a leading software house explains its selection criteria.
- 12.15 Lunch
- 12.45 Dealing with the man in the street - a case study - High volume Low cost products may be right for you.
- 13.00 Selling into business - a case study - higher unit costs but no cash than the home user?
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### THE OEM MARKET

## Network vendors face unique OEM problems

Phil Manchester explains how local area networks got in the OEM world

EVER since Xerox, Digital Equipment and Intel announced their unprecedented joint venture into distributed computing, otherwise known as Ethernet, in 1980, local area networking (LAN) has been a hot subject.

If you forget the "local area" part for a moment, the subject of networking has been around in one form or another for about a decade and has its roots in the move toward distributed computing back in the 1970s.

What makes Ethernet and its rivals different is that it is aimed at providing a general purpose conduit for internal communications with the emphasis very much on the general purpose.

This has obvious advantages to the chief protagonists (the LAN trio in this case) but it also provides opportunities for other suppliers to jump on the bandwagon. The establishment of industry standards is a two-edged marketing sword.

Yes, you may well get your particular philosophy adopted as the only true path, but at the same time this path becomes a fixed target for the competition to snipe at. IBM found this with the 360/370 machine architecture (among a number of other things - 3270, 2780 terminals to name a couple).

As soon as the architecture be-

came fixed little companies like Andahl, Irel and Magnuson came along and did the same job much better and much more cheaply. More importantly, the hungry young Japanese computer industry also look advantage of the industry standard to model their first computer range.

Copying a single machine architecture - especially one as well established as the 360 now is - is relatively easy in comparison with modelling something as vague as a networking philosophy.

IBM's System Network Architecture, for example, has undergone several radical changes since its first announcement nearly a decade ago. In those days centralised, hierarchical control - as befits an organisation such as IBM - was the thing. Nowadays, a more "democratic" approach has become the vogue and manufacturers have become more conscious of the idea of open systems following the moves by the international standards bodies to create a universal networking standard.

Inevitably, this means that a whole new sector of the industry is beginning to emerge - that specialising in the art of networking. So there are now any number of Ethernet look-alike systems, token passing ring networks, "Cambridge" rings and so forth.

These companies are currently involved in a unique marketing exercise where the target is no longer the end customer, but other suppliers. There are strong precedents for this type of operation in the peripheral business suppliers of 3270-type terminals, for instance, are manyfold, as are suppliers of disc store.

But the vendors of networking styles face a set of problems which no other OEM-style business has. They are dealing chiefly in the realm of ideas and, as a number of their potential customers are well aware, one set of ideas can easily be exchanged for another at this

early stage in the game. "The manufacturers are using you as if they find another way of doing it they can easily drop you," commented Martin Waldron, marketing manager of Network Systems Corporation.

"We had an example recently where we had insufficient control over the deal and lost contact with the customer," he went on.

NSC is one of the earliest network pioneers. Its Hyperchannel product is aimed chiefly at connecting mainframes together rather than providing a full general purpose LAN Ethernet style. Started in the US in the mid 1970s, NSC took over its European franchise operation from distributor Tesdata a year ago.

"We are in a unique position at the moment," Waldron explained. "We are the only truly independent supplier of networking hardware and software which means that we can deal with all of the computer hardware manufacturers."

Waldron pointed out that this position gives NSC an edge over companies that have sworn allegiance to a particular philosophy - say IBM or DEC.

"We provide a means whereby all manufacturers can get their machines to communicate with each other without having to adopt a specific line," he added.

He suggested that a networking philosophy based on one manufacturer's ideas would prove unacceptable to another manufacturer for both technical and political reasons.

‘The vendors of networking styles face a set of problems no other OEM has’

DEC is hardly likely to admit to being able to connect its machines to Prime's or vice versa and the same goes for all competitive manufacturers.

On the other hand NSC's position is vulnerable, depending as it does in the end on the goodwill of the manufacturers to provide technical specifications and openings for sales.

"The level of cooperation is very high because we can offer a specialist service that they cannot provide themselves."

"We have just signed up a joint agreement with Univac, for example, where they are providing driver software and using our boxes. Burroughs, too, is buying our boxes - recently it bought 20 or so and put them into a customer with little involvement from ourselves," Waldron said.

Sometimes, however, the deals are arranged the opposite way round where NSC takes the prime contractors' responsibility and the machine builder stays in the background.

"Most commercial customers want to deal with just a single contractor and in some cases that is us."

Waldron went on to say that NSC's latest offering - the Hyperbus - would lend itself even more to OEM deals.

"There is a company on the west coast of the US which is buying our Hyperbus boxes and sticking its own name on them."

Waldron added that NSC had been discussing a similar proposal with British Telecom along the lines of a deal between BT and Ungerman Bess which signed up with BT recently to provide Ethernet style networking products.

He emphasised, however, that selling networking products was not a black box selling operation and involved a high level of technical expertise.

"You have to gain the confidence of the customer," he said.

And this means the OEM supplier as well as the potential end customer. NSC is mainly operating at the top end of the market dealing with the major manufacturers and the large corporate users - Hyperchannel is not a cheap product.

It is moving more into the lower end of the market with its Hyperbus product, however.

Keen Computers, the Nottingham based system builder, is already working at that end of the market acting as a distributor for the Corvus hard disc and the Omninet product.

In fact the two products are linked as the Omninet acts as a useful conduit for microcomputer customers to access large amounts of disc storage.

"We have about 20 active dealers," explained Allen Taylor, Keen's marketing manager.

"They are selling very heavily

into vertical markets. Estate Computing based in Lincolnshire is using the network to build an estate agent's package."

Keen's software subsidiary company, Atlantic Software, is itself an OEM customer of a number of US software houses and is building multi user, Unix based systems around the Omninet for accountancy applications.

"You could classify us as both an OEM supplier and as a primary source," Taylor commented.

Where NSC sees its networking product as a means for linking mainframe and mini machines together, Keen sees the Omninet as a means of extending micros into mainframe and mini applications.

In other words, with an Omninet and a bunch of micros connected to a large disc store, you can pretend that you have a mainframe with a bunch of terminals on it.



WALDRON... "The manufacturers are using you."

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COMPUTERISED EXAMINATION RESULTS

In August 1981 it was widely reported in the national Press, and in Computer Weekly, that the Associated Examining Board had put out incorrect A-level results. A faulty printer ribbon meant that many candidates with 'B' gradings were apparently given 'E'

or fail gradings — and as a result did not qualify for university. The West Midlands Examinations Board thinks it has a fail safe, and sympathetic computer system. The Board's WILLIAM BROWN describes how the system works in practice.

Pass with distinction for exam board's sympathetic system

A COMPUTER has no heart, but it is fundamentally important to the operation of our examinations. So it has to be used in a way that enables us to discharge our responsibility to the candidates whose level of attainment we seek to measure and to their teachers. The West Midlands Examinations Board's responsibilities include the computerised system through which CSB results for about 85,000 children are processed each year. The system developed over the years attempts to combine the optimum use of the computer for administering the results process with the human face of a sympathetic examination board.

No examination system of the kind we have to use is free of error. At the same time, having built up a system over the years, we have great confidence that few, if any, discrepancies can arise through computer processing and go undetected.

These words may sound brave, but by the system of checks and counter checks that we have introduced, it is difficult to see how discrepancies could pass unnoticed before results slips are sent out. The size of the task faced by West Midlands each summer is a total of 435,000 subject entries. Subjects have a variety of components including written scripts and multiple-choice answer sheets. The latter category comprises about 100,000 subject entries with 50 questions each on average — a marking task for the optical mark reader and the computer of 5,000,000 answers. In addition m results processing, the computer system is used

for estimating the number of entries for each year's examinations, which takes place between September and November of the previous year, the recording of actual examination entries each February and March, and a "pre-testing" process for multiple-choice papers that takes place each March/April. The high-volume, high peak utilisation of the computer system occurs between June and August. For a further six months the system is utilised but at fairly low-peak demand, and for three

puter and the examination staff. The facility became remote, access was difficult and we had less and less control. So the Board moved to UCC in Birmingham. This restored the closeness of the operation, but access and control were still inhibited while data was handed "over-the-counter" for processing and print runs.

The system developed by West Midlands and UCC now comprises an internal minicomputer together with optical mark reader and character printer with a dedicated line

BROWN: "No exam system of the kind we use is free of error. At the same time, having built up a system over the years, we have great confidence that few, if any, discrepancies can arise through computer processing and go undetected."



panies is produced and schools are sent slips indicating where they have entered more or less candidates than they estimated. This enables them to check that no errors have been made and that there have been no inadvertent omissions.

Fee lists, entry lists, examiner extraction lists and mark sheets are then printed, together with candidates selected at random for special study assessment and a list of grades estimated by schools. Finally, each school's stationery requirement is produced.

The entire phase is subjected to staff checks, particularly where discrepancies are found between estimated and actual entries. This avoids the situation where a child is inadvertently omitted at the entry phase and is then faced with a penalty fee for late entry when the omission is discovered.

In March of each year the Board selects between four and five thousand students from 200 schools to undertake a series of multiple-choice question papers. The object of this exercise is to test the validity of questions by statistical means and to add each year to the library of multiple choice questions.

In the examination itself, the multiple choice answer sheets and mark sheets are laser-printed with candidate details by UCC using the

Clearly the results phase is the busiest and the most critical. Throughout, the computer system is designed to "flag" the unusual and the unlikely, and it is subjected to innumerable checks and counterchecks by staff. It is the phase in which human sympathy is added to the essentially heartless computer processing function.

Computer input is from three separate sources — examiners' mark sheets, multiple choice test marks from the optical mark reader and multiple choice test marks received from the Joint Matriculation Board where the two boards are working jointly.

In addition, staff will apply a range of weightings and adjustments to take account of unusual circumstances in which candidates may be sitting the examinations, variation in individual examiners' marking criteria, where a mean and deviation formula is used to redress the balance. We cannot of course attempt to assess what a candidate might have achieved in other circumstances, such as a one-armed typist. What we can do is to assess what their true attainment actually is. Examiners' marks and totalling are all subject to staff check before keying into the computer.

For the multiple choice papers, the system is fairly straightforward.

There is a danger with computer systems that candidates are seen as numbers. We remind ourselves constantly that children are people and their results can have a vital influence on the entire future of these children

basic entry file which, at this point, will just have been completed.

The reading and marking of the answer sheets is undertaken by the computer using the programs devised for the actual examination results phase. What the test achieves is an indication of how particular questions fare over a range of student abilities.

If 100% of the students get the correct answer, then the question has poor "discrimination". If students who normally do well, do it has bad "facility". So the Board is able to maintain a bank of questions that provide an accurate measure of ability for all candidates taking objective test papers.

ward. The Loogines optical mark reader scans the answer sheets, picking up the laser printed candidates' details and pencil marked boxes. The results are instantly transferred to diskette in the MDS/21/40 in asynchronous mode. Answer sheets containing errors, discrepancies or queries are separated in the OMR and deposited in a reject hopper while the character printer produces a discrepancy report simultaneously.

There are three main reasons for discrepancies. Pencil marks are too faint to be read, cancellation marks are too faint so the candidate is deemed to have given two answers, which is invalid, or the candidate fails to answer a number of ques-

tions, and here the computer throws up a query if more than five questions are unanswered.

Each answer sheet in the reject hopper is then examined by a member of the staff. With the aid of a VDU the marks for each of these sheets is called up and the line can be edited in the light of the reason for the discrepancy and re-entered into the computer data corrected.

Once all marks are entered, the "examiner constant" and "scaling" reports are printed. Marks are then scaled, standardised and validated. Where subjects have coursework, these marks are added. At this point marks are printed out by UCC including a breakdown by subject and paper, with a marks distribution list.

The next check is to compare this final marks file with the best entry file. This will show entries from the entry phase without marks, sets of marks for which there appears to be no entry and, when grading lines are inserted, it enables comparisons to be made between actual examination grades and the schools' estimated grades. Again the computer will highlight the anomalies, and intensive examination by Board staff follows.

Only when the Board is fully satisfied are the results slips run — and even then manual checks are applied before they are sent out. But this is still out of the end of the process. Appeal may be made and a further "anomalies run" may be needed. Indeed it is West Midlands' claim that in the event of appeal there is no part in the entire process right back to a written script or an objective test answer sheet that cannot be retrieved for manual examination.

There is a danger with computer systems that candidates are seen as numbers. We remind ourselves constantly that children are people and their results can have a vital influence on their entire future.

Even the appearance of the final certificate is important to the youngster. We have recently organised a design competition for this year's certificate. Finally, because so many runs are required to satisfy ourselves that all the anomalies have been ironed out, a close working relationship between the Board's staff and the bureau staff is absolutely vital; and that I think we have. William Brown is second deputy secretary of the West Midlands Examination Board.

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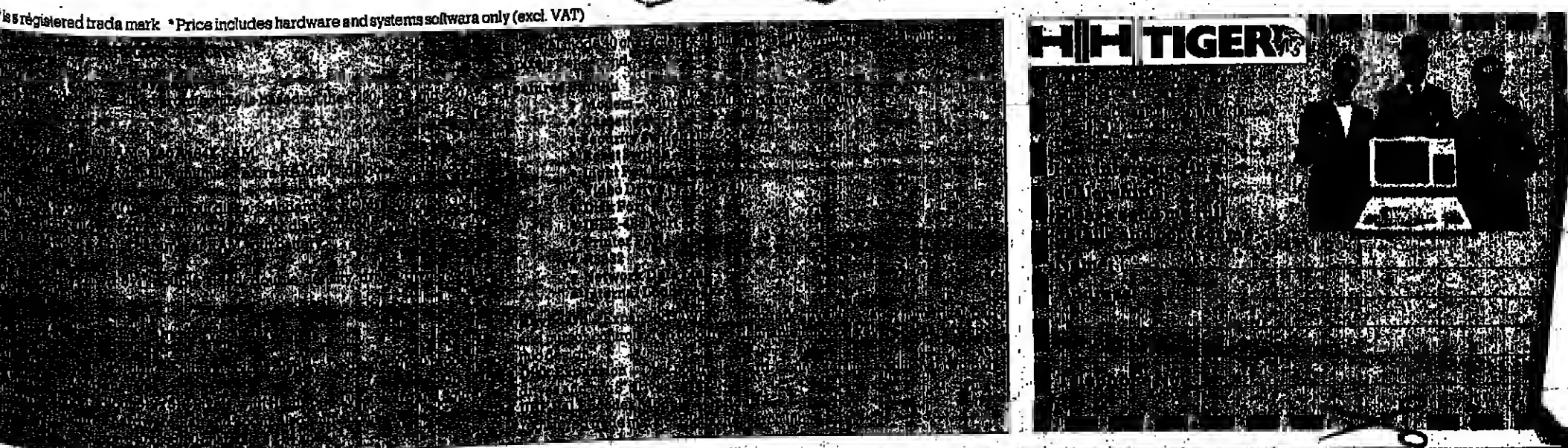
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From the answers received the computer generates a complete report for the area showing the number of estimated entries, by subject and by school, the schools examinations and so on. Slips are printed and sent to the schools as a record and a master file is maintained at UCC for later comparison with the actual entries.

As a by-product, estimates for the examination stationery requirements are generated. This phase takes place between September and November each year.

In February of the following year entry forms are sent to each school. From the completed forms UCC builds up a master file containing each candidate's details and the subjects for which he or she has been entered. When the Board is satisfied with the basic entry file, it is then compared with the estimate of entries file. By this means a print run showing discrepancies



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## Systems Analyst

Notwich

£21,000+Car Allowance

Unilever Computer Services Ltd is a company within the Unilever group offering computer development and processing facilities to a wide range of clients both within and outside the group. A recent £4M investment in hardware has resulted in the installation of an IBM 3083B, and a NAS 665Q 7031 at the new custom design computer centre at Woking.

The development team at Notwich will be expanded to provide systems house facilities to the centre and will be handling a wide variety of applications. As well as IBM oriented developments the group is currently engaged on projects featuring a PDP 11/44 and sinus micro computers.

A minimum of 2 years analysis experience is required from a previous technical background preferably in an IBM or DEC environment. Experience in any of the following will be an advantage: Online/database eg CICS/DLI, Production/manufacturing systems, mini computer on-line or intelligent terminal (pref DEC).

The Systems Analyst will work as part of a project team or may project lead the development of systems as appropriate. You must be self

motivated and capable of working under your own initiative in a client environment. On some occasions you may be involved in travel within the UK.

The development group is based in Notwich which offers low cost housing and is within easy reach of the Broads and Coastline.

The usual large company benefits will be offered to the successful candidate e.g. pension scheme, free BUPA, car allowance, re-location assistance etc.

For further information and an early interview please Knight on 01-491 4706, quoting Ref: YV/112.



**Unilever Computer Services Limited**

## RPG Programmer

Hampshire

Attractive + generous bonus scheme

Estee Lauder Cosmetics is an extremely successful privately owned American company with affiliates worldwide.

The UK operation is the largest of these affiliates and is located in Petersfield, Hampshire. The company's Financial, Marketing Information Services, and Warehouse and Distribution activities are centred here and are supported by computerised information systems.

The computer installation configures an IBM System 38 Model 5 supporting twenty live VDU's and four local work station printers. Plans are already underway to upgrade the present hardware later this year. Extensive systems development is in progress to take full advantage of the facilities offered by System 38 across the full spectrum of business applications.

You will have a minimum of two years RPG2 or 3 experience gained in a commercial environment, preferably in an IBM GSD installation. Some previous involvement in Systems Design, though not essential, would be an advantage.

If successful, you will have the opportunity to learn new skills based on IBM System 38, developing interactive systems with the possibility of career progression into an Analysis role.

You will be offered a starting salary depending on qualifications and a generous bonus scheme (profit/performance related). Excellent company benefits include a subsidised restaurant, discounts on company products, contributory pension scheme and BUPA. Knight recommends that you phone immediately for an early interview on 01-491 4706, quoting Ref: MJ/804.

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A comprehensive range of computing facilities is used to service the variety of applications for this major division. A Pricing system is currently being implemented on a DEC PDP 11/70 and subsequent projects have been identified, including a new Product Promotion system.

The division now requires an ambitious programmer able to meet the following criteria:

- \* A good knowledge of RSTS/E
- \* At least eighteen months experience of BASIC + or BASIC +2
- \* The potential to progress into a systems analysis role
- \* Bright, reliable, self motivated and able to form effective relationships with users.

If you are looking for a challenge and an environment where you can make a real contribution, then our client can present the ideal opportunity.

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**Confidential Reply**

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Saga Holidays PLC have achieved this by providing a high quality service to its customers and they currently sell nearly a quarter of a million holidays every year.

Their business in recent years has been further enhanced by the ability to offer information to all customers, expeditiously and reliably.

Their computer installation comprises two IBM System 38's supporting sixty terminals. They are designing a comprehensive integrated reservations and booking system, incorporating customer and marketing application areas.

To meet the ever increasing demands of their Data Processing strategy, Saga Holidays are currently seeking to recruit three additional programmers to supplement their existing development team.

Applicants will have a background in an interactive environment, preferably with programming experience of either RPG II or RPG III. A further advantage will be a knowledge of IBM GSD hardware and software.

Saga Holidays are housed in impressive offices situated in pleasant surroundings overlooking the English Channel.

Successful candidates will be offered a salary of up to £10,000 per annum depending on qualifications as well as a substantial company benefits package. For further information and an early interview, contact Knight on 01-491 4706, quoting Ref: MJ/905.

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## Data Processing Manager

Salary: Circa £14,000 per annum plus company car plus other benefits

Location: East Kent Coast

Our client, a manufacturing company based on the East Kent coast, now wish to recruit a Data Processing Manager to head up their well-established Computer Facility. The company is one of the best known in its field, and its established products are household names. The innovation of its management has also created a wide range of new products that are achieving a significant market penetration.

The position of Data Processing Manager is a very important one within the company structure and reports to a main board director. We are looking for someone who has a sound technical background in a systems and programming environment over a period of at least eight years and feels confident working at a senior level. We would like to meet a "thinker", not only in computer and business terms but also in people skills, who will welcome the opportunity to run "his/her own show," and will appreciate that flexibility of attitude and willingness to adapt quickly to direction from senior management is

mutually beneficial. You will probably be in the age range of 30 to 35 and will have a broad understanding of modern computer technology. You will also be looking for your first senior management appointment, and will be attracted to this position because it will offer you considerable scope for personal and technical development. You will also welcome the opportunity to make a significant contribution to company development in a stimulating environment.

The East Kent coast is one of the few parts of Southern England where housing prices are still reasonable. This, combined with the job opportunity and negotiable package, makes this position exceptionally attractive.

If you are interested in this position please send a curriculum vitae to John Goldsmith at JVG Recruitment Ltd.



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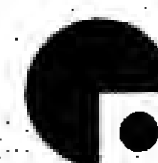
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CDS is an Anglo-Swiss Consultancy specialising in systems programming and DB/DC application development. For further details of the above positions or for an informal discussion on future European or UK assignments please contact Mike Shine at our UK offices Tel. 0276 681261 for an 0276 61808 during evening/weekends.

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# Data Administrator

Location: near Gatwick Airport  
Excellent starting salary plus exceptional benefits

Our client, a major international airline with their offices in one of the most attractive parts of southern England, now wish to make the important appointment of a Data Administrator. The position is a new one and carries significant responsibility in terms of contribution. British Caledonian have a medium sized IBM installation and would now like to meet someone who has built up good experience of the use of data in a large business organisation.

Although the position in technical terms will be demanding and an IBM background, especially in a D1/1 environment, would be an asset, the most important attribute will be the ability of the selected candidate to advise users of the best way of handling their data. It will, therefore, be appreciated that there will be significant user contact, and this makes the job very much more interesting than the average Data Administrator

position. At the same time it is more demanding.

If you are interested please consider the following questions:

- Are you currently working in a Data Administration environment?
- Do you have a good IBM background in a medium sized installation environment?
- Are you persuasive and do you like using your own initiative?
- Are you sincere in your dealings with users?
- Are you anxious to work in a company where you will be given every assistance both technically and in management terms to ensure the proper use of Data Base techniques?

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You will probably be in your early thirties, with a sensible mix of sales and systems experience. Knowledge of DEC hardware and software is essential. IBM and/or ICL appreciation would be an advantage. This position requires an ability to develop proposals for business solutions and to sell these proposals to senior management, backed by a team of experienced professionals. The successful candidate will already have a good track record in sales and must be a self-starter. There is a choice of car and the successful candidate can expect to earn in excess of £25K per annum.

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The successful candidate will be a well qualified software professional with at least 3 years' experience of RSTS and VMS and/or RSX together with sound telecomms and networking knowledge. He/She should be self motivated, possess excellent communicative skills and be used to operating in both the pre-sales and implementation areas. The highly attractive salary is backed by a valuable range of benefits and the prospects within the organisation are outstanding.

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## Planning & Evaluation (Software)

This position will influence our future Software Development environment, being particularly responsible for the identification and implementation of Software Development Tools.

You should have several years' in computing, the last three of which should be in a real-time software environment. Your background should be based on a relevant degree and include training in a wide range of software tools and programming languages.

The position interfaces with internal and external personnel, particularly equipment suppliers who will be asked to meet performance criteria based upon your benchmarks. The abilities therefore to communicate both verbally and in writing are equally important as your technical and supervisory skills.

## Systems Planning & Control (Hardware)

This position encompasses the hardware element of our strategic systems plan to include telecommunications equipment, processor hardware and a wide range of peripheral devices. Additionally you will be asked to set up and maintain a software environment plan which will cover all systems software and interface/communications software.

To qualify, you should have a degree in an engineering discipline, augmented by five or more years' in technical or operational computing. Your most recent experience should be in a systems planning role with exposure to three key areas which are data management, communications network architecture and computer aided engineering.

You will be providing detailed support to the Systems Development Manager in identifying opportunities to integrate related areas such as C.A.E. with financial and production disciplines.

Candidates seeking consideration for these challenging new opportunities should telephone our Advising Consultant, Roger Dorriault on 01 935 0871 (24 hour answering service) or 01 870 0482 evenings and weekends 7.00-9.00 pm. Alternatively submit a brief Curriculum Vitae to our London office.

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Employment/business section

(2285)

## ANALYST PROGRAMMERS (CROYDON)

We have several positions in the Computer Services Division based at our Head Office in Croydon. You will be working in a small team on various projects based on our twin Systems 6700 (PDP-11) installation.

Applicants must have at least two years' experience of Basic+ under RSTS/E. Fluency in either RPL or COBOL would be an advantage.

An attractive income package commensurate with qualifications and experience is offered together with such benefits as a non-contributory pension scheme and flexible working hours.

For further details and an application form please telephone or write to Mr. D. Carlysle, Head of Computer Services, R.A.C. House, Lansdowne Road, Croydon.

Telephone: 01-886 4682



Our only concern is the Motorist

## Programmer/ Analyst

The Science and Engineering Research Council is currently reviewing its administrative computing requirements and expects to purchase a number of software packages to meet them. In connection with this the Daresbury Laboratory, one of the Council's major laboratories, situated in the North Cheshire countryside is seeking a programmer/analyst for the Applications Group of its Computer Systems and Electronics Division.

The Laboratory provides major facilities for scientific research undertaken by University research workers from this country and abroad. The computers at the Laboratory include HAS 7000, CDC 4000s, VAX and PDP 11s.

The successful applicant will assist in implementing the packages, in developing links between them and existing systems and in the provision of programming and database support.

The Applications Group supports a wide range of scientific and administrative databases on several different computers and opportunities to participate in these projects will arise.

Applicants (male or female), should have a good honours degree (or equivalent qualification) in an appropriate scientific discipline and a sound programming background. Experience in some aspect of database systems or package implementation, particularly on IBM computers, would be an advantage.

The appointment will be made at Scientific Officer or Higher Scientific Officer level depending on qualifications and experience. The salary ranges for SO/HSO are £5,482 - £7,389 and £8,840 - £11,180 per annum respectively.

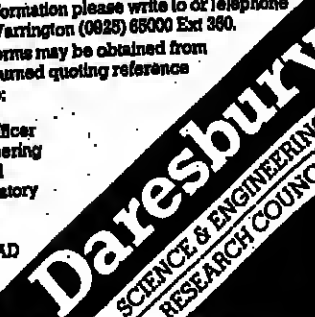
There is a non-contributory superannuation scheme, a generous leave allowance and a flexible working hours scheme. Some assistance with expenses for house sale and purchase may be available.

CLOSING DATE: 28th March 1983

For further information please write to or telephone Dr. M. Elder on Warrington (0625) 68000 Ext 360.

Application forms may be obtained from and should be returned quoting reference number DL/800 to:

The Personnel Officer  
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Sutton, Surrey SM2 5AS

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Application forms and further particulars may be obtained from the Personnel Officer, Highland Health Board, Remy House, 17 Old Edinburgh Road, Inverness, IV2 3HG, and should be returned not later than 6th May, 1983.

(13271)

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(13131)

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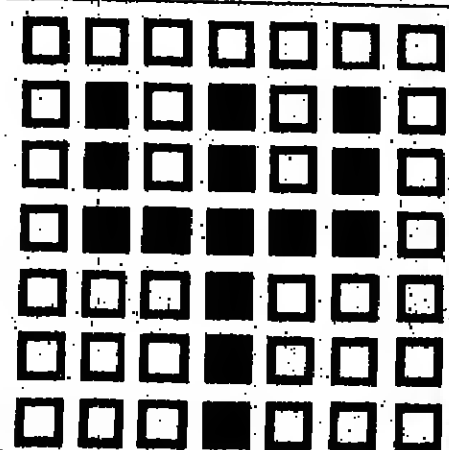
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## Field Service Engineers Leeds/North East Southampton/South West

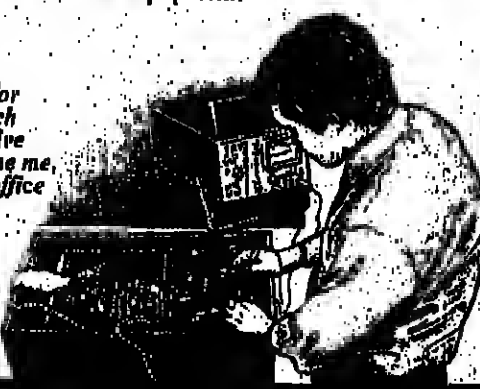
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For further information, or to apply for any of the above positions, all of which carry a competitive and comprehensive salary and benefits package, telephone me, Dicky Dyke, on 0905 611512 during office hours, or 06845 2210 evenings and weekends, or write to me at the address below.



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DEC/HP/WANG/DG to £12K  
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ICL/VMEB or K to £11K  
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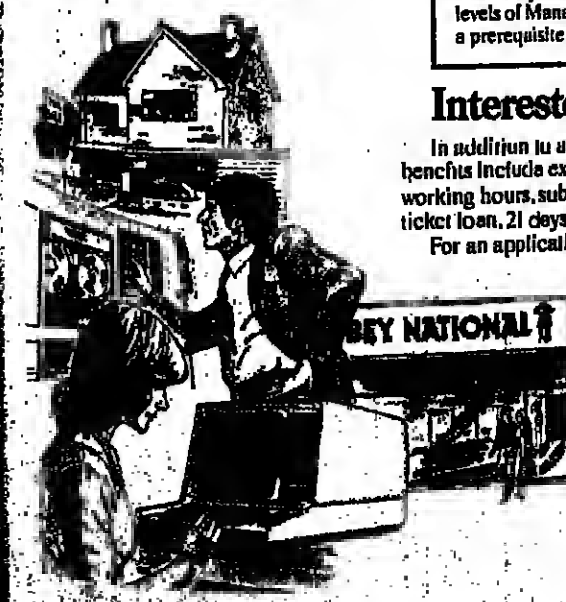
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01-407 2531

(3224)

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(3201)

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**OPERATING SYSTEMS SOFTWARE SPECIALISTS.** To select, install, maintain, and monitor operating system software in a large-scale, IBM-based facility center with software including: (i) VM/CMS operating system, (ii) VSI as guest system, (iii) performance-resource monitoring facilities, (iv) TP subsystems, including DSCSN and VCNA under VM, TCAM and VTAM under VSI, and software in the 3705 communications processor such as NCP, NTO.

The successful candidate(s) should have (i) university degree or equivalent education, (ii) a minimum of five years' experience in any two of the above software areas, (iii) experience in large-scale system development or maintenance, using high-level programming languages, (iv) exposure to large-scale data-base management systems, such as IMS, Model 204, ADABAS, or others of similar sophistication, (v) demonstrated ability to diagnose and analyze system faults in a logical manner, (vi) demonstrated ability to work independently, and to "multi-thread" unrelated tasks while maintaining perspective on relative priorities.

Strong experience in IBM teleprocessing subsystem software is highly desirable.

**PACKAGE SOFTWARE SPECIALISTS.** To select, install, maintain, and monitor application software packages operating in large-scale, IBM-based facility center, including Model 204 large-scale DBMS, FOCUS DBMS, SAS statistical analysis package, AUTOTAB financial analysis package, and others. Work includes installation and maintenance of software packages, testing and introduction of new releases, system operation, and trouble-shooting, monitoring and tuning; providing expert consultation to users on the suitability, cost-effectiveness, resource requirements and other related aspects pertaining to the use of the package software systems.

The successful candidate(s) should have, (i) university degree or equivalent education, (ii) first-hand experience with large-scale IBM computer operating system operating under VM/CMS and OS environment, (iii) experience in large-scale system development or maintenance using high-level programming languages, (iv) demonstrated ability to diagnose and analyze system problems in a logical manner, (v) demonstrated ability to communicate effectively with end users and management, (vi) demonstrated ability to work independently, and to "multi-thread" unrelated tasks while maintaining perspective on relative priorities.

Current working experience with Model 204 or FOCUS is highly desirable.

The World Bank offers a competitive salary and benefits package. The positions are based at the Bank's headquarters in Washington, D.C. Please send a detailed curriculum vitae, quoting reference No. 3-3-UKG1002 to:

**The World Bank**  
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1818 H Street, N.W. Washington, D.C. 20433, U.S.A.



(3218)



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(3229)

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13198

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LOCATION: HAMPSHIRE

JAS18/1

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LOCATION: HAMPSHIRE

JAS19/2

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LOCATION: SURREY

JAS19/3

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(3214)

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Applicants, male or female, are requested to write in strict confidence, enclosing c.v., quoting ref. 227, to Douglas Atkins.

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Application form/job description from District Personnel Department, District Office, Union Lane, Rochford, Essex SS4 1RB. Southend-on-Sea (0702) 548354, Ext 201.

Closing date for completed applications: April 28th, 1983. (3262)

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## UNIX Programmers

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## MANCHESTER JOB OPPORTUNITIES

MANCHESTER may be a rainy-grey town like the one in the lyrics 'Misty', but as the commercial centre of Lancashire and the North-west, the area seems to be a flourishing one for the computer industry.

A number of Greater Manchester employers say they have expanded their computer operations despite pressure from the recession. Surprisingly for a public sector body, the Greater Manchester Passenger Transport Executive has recently recruited more computer staff.

Processing manager Bill Drynan, the Executive has identified "more beneficial computer projects."

"When we looked at the bottom line," said Drynan, "we saw we had to either spread our projects over a longer period or add more people."

The people option won and the Transport Executive has been recruiting systems designers for several new schemes - a new crew schedule aimed at saving money on manpower, redesigning the management accounting system, and a detailed feasibility study of the whole engineering function.

"These are all still in the design stage but at the end of this year the Transport Executive expects to begin recruiting extra programmers to run the new systems."

The Executive, which is the highest public transport administration after London Transport, prefers to train its existing staff for promotion, rather than recruiting skilled staff from outside.

And DP manager Bill Drynan is full of praise for TOPS programming graduates. "We've found them

# Good bet for the programmer looking for some experience

The Manchester DP industry is healthy despite the slump, says Margaret Park

to be fine," he said. "TOPS courses aren't producing programmers, they can just about spell and write, but they come to us with more than nothing so I'm not knocking the TOPS scheme. The only problem is that TOPS is oversold - they can't claim to be fully fledged programmers."

The Transport Executive has taken a number of TOPS students and has an extensive in-house training scheme.

It has just concluded a deal with the training ser-

vices company Delta, in a series of its training documentation packages. And the Executive runs its own training seminars and sends staff on external courses as well.

Of course the other side of the recruitment coin in the Manchester area, and in any other part of the UK, is that certain industries are suffering to a greater extent from the recession.

ICI, the giant chemicals firm for example, hasn't recruited externally for its data processing department

for the past four years.

Angus Coutie, the DP manager, explained that since the order to cut back resounded through the company, all additions to the computer department have arrived by transfer from another part of ICI.

"We've cut back our staffing levels by 40% over the past four years," said Coutie, "because of business pressures."

Most of the cuts have come from voluntary redundancies. The few new arrivals in the computer depart-

ment have all been ICI employees with no previous DP experience, so Coutie's department relies upon being able to train its own staff.

The field where computing jobs are more easily found is computer services. Hoskyns systems division in the Manchester suburb of Sale has been recruiting steadily.

Barry Hobson, director of this division of Hoskyns said it is expanding and the company is almost always on the look out for a

whole range of skills. Hoskyns does work for outside clients on different hardware, so programmers and analysts with experience on kit from the major suppliers - IBM, ICL, DEC, Hewlett-Packard and so on, are in demand.

Centre-file, another bureau, this time in Manchester's Trafford Park, has also expanded. But because of a slow staff turnover, the bureau fast reached the number of staff needed.

"We've reached the right level over the last month," said the DP manager Peter Cariss. "We have been growing but have plateaued out because we've never had a high turnover of staff."

Centre-file is an example of a nationwide employment trend. Growing unemployment has meant that in the last couple of years, staff have hung on to their jobs. Once in a secure job with an established firm which looks unlikely to go bust in the next fortnight, employees tend to dig in their heels and settle down.

And even computer staff, once known for their ability to flit from job to job attracted by competitive salaries, have been affected.

"Our only turnover in the last two or three years," said Cariss, "has been a result of either maternity leave or retirement."

"In three years," he added, "only three people have left us for alternative employment and two of those were lured to the US."

Centre-file does a lot of business in the installation of turnkey systems and also reports complete satisfaction with TOPS graduates.

"We've taken about twelve so far, trained on IBM and ICL kit," said Cariss.

But according to Cariss, Centre-file has had a harder time attracting experienced staff to Greater Manchester.

"We've been looking for people experienced in IBM's MVS operating system," Cariss said, "but we didn't get a lot of applicants even though we advertised nationally."

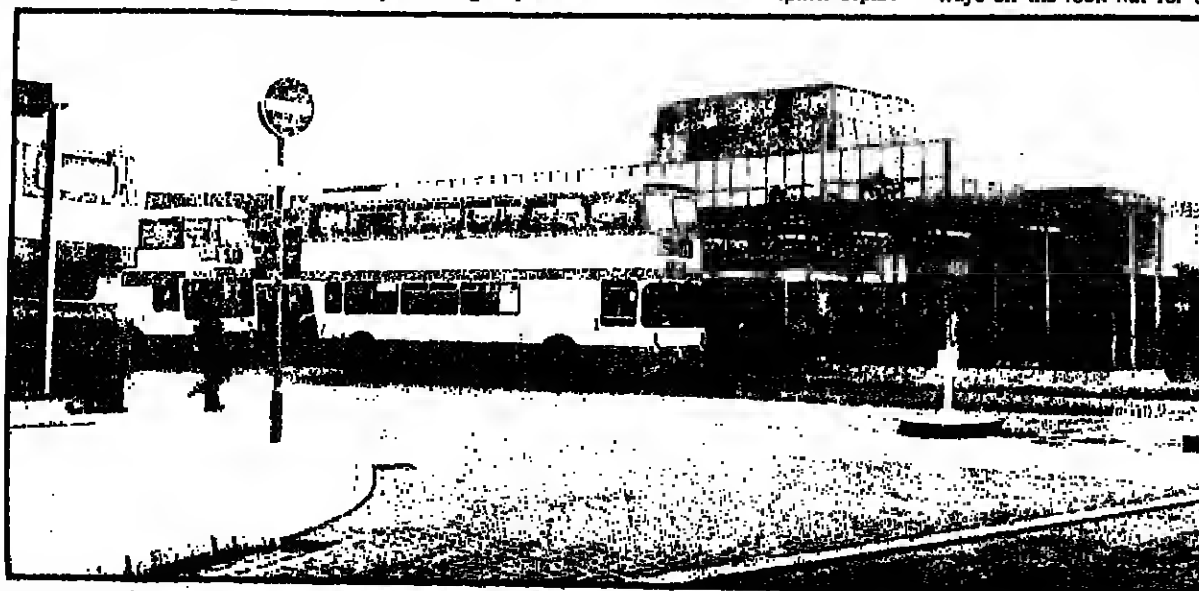
The overall recruitment picture from the Manchester area is so optimistic one for newcomers to the computer industry. Most of the big employers are keen on TOPS students and most are prepared to provide extensive training in programming skills.

So Manchester seems to be a good bet for a new programmer looking for an opportunity to get experienced.

The British Mail Order Corporation has computer department of 135 and the DP manager, John Corfield, said that a large number of these had either been taken over by the company or had worked their way into programming through operations.

"Operations is a good grounding for programming," said Corfield.

The Corporation occasionally takes experienced staff - it has needed them recently because of a long overdue changeover from the DOS operating system to IBM's newer MVS.



Surprisingly for a public body, the Greater Manchester Passenger Transport Executive has recently recruited more computer staff.

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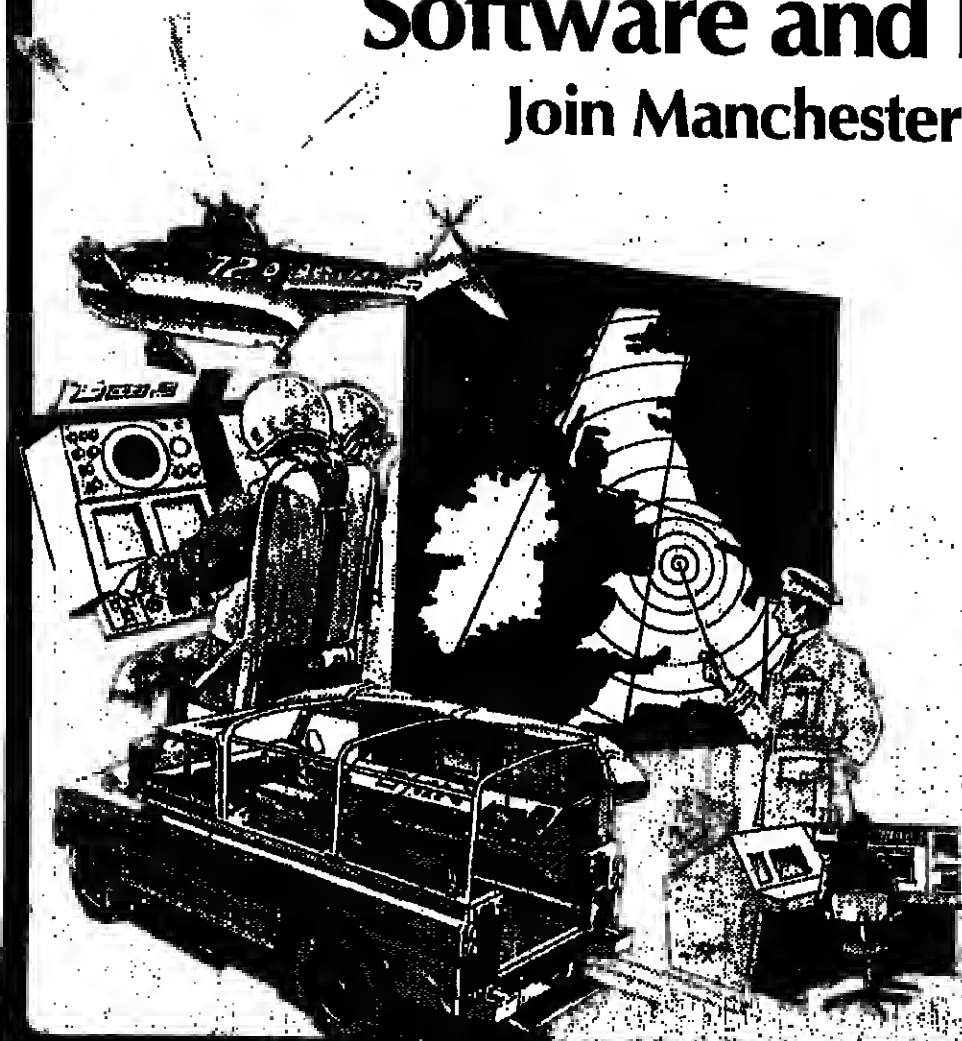
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of detailed plans to the day-to-day control of their implementation. Liaison with user, computer department, service contractor and equipment supplier representatives, at all levels will be a major aspect of the work.

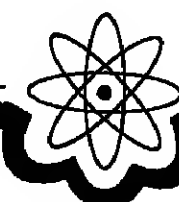
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## MANCHESTER JOB OPPORTUNITIES

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Wrexham Major Borough Council

### MANAGER Wrexham Information Technology Centre SALARY CIRCA £11,000

The Wrexham Major Borough Council, together with a group of interested industrialists is establishing an Information Technology Centre as part of its industrial development programme on the Whittage Estate at Wrexham. The Centre will provide training in the first instance for 30 young people in industrial electronics, computing and electronic office skills. The development of marketable products and services is to be encouraged and as part of the Authority's industrial development programme it is envisaged that some of the persons trained will develop the necessary skills to establish their own business. Accordingly, there will be a strong link between local industry and the Centre. A Manager with relevant experience and qualifications is required to establish the Centre as an important facility for expanding the use of microcomputers in the community and providing skilled personnel for the business sector of the area. Assistance with temporary housing accommodation and reimbursement of removal expenses will be considered in appropriate cases, in full three year contract.

Applications, which should be a comprehensive C.V., should be addressed to Personnel Officer, Wrexham Major Borough Council, Guildhall, Wrexham LL11 1AY. Tel. No. Wrexham 364611, Ext. 48.

Closing date: Wednesday  
20th April, 1983

PER WREXHAM TEL. 364576

PER Executive  
Selection.

## SYSTEMS AND PROGRAMMING

**COBOL/CICS LONDON To £9,500**  
Central London based insurance company housing IBM 4341's with DOS/VSE, COBOL and CICS requires a key, enthusiastic programmer. Preferably a graduate with 12 months + COBOL/CICS experience to join their dynamic development team, working on a range of financial applications. They offer excellent benefits including subsidised mortgage, free lunches and flexitime. Ref. C 2368

**DEC MUMPS LONDON To £11,500**  
Senior position with this City-based company for an analyst/programmer with around 4 years' DP experience, at least 2 years' analysis, and experience of DEC MUMPS. You will be offered every chance to move into management, and work with a variety of machines in a stimulating environment. Ref. C 2129

**BURROUGHS - COBOL To £10,500**  
My clients, a major and successful household name, are currently seeking programmers and analyst/programmers with Burroughs mainframe experience and a bias toward commercial applications. You will be involved in development work of a very high standard, and be encouraged to advance into systems and program design. Based in Herts, the department is large yet the teams within it are close knit, and professional. Please send for more details. Ref. A 1920

**UNIVAC - COBOL To £10,000**  
My clients offer the chance for experienced UNIVAC 1100 programming staff to join an expanding organisation where their ability to develop advanced business systems will be rewarded. You will be trained in both database and insurance applications, whilst working to a real-time on-line environment, sited in the heart of Kent. Opportunities for progression are solid, and benefits include flexitime, sports and social club and mortgage subsidy where appropriate. Ref. A 1924

**BUSINESS BASIC CENTRAL LONDON £9,000 neg.**  
With a minimum of 6 months' Business Basic experience on Data General equipment you could be joining this busy computer bureau solving a wide range of clients. Working as part of a small team, you will be expected to deal with users, develop and finally implement various systems. Ideal opportunity for an ambitious programmer to train in analysis. Ref. D 2319

**IBM SYSTEM 38 To £10,000**  
Would you like to work for a small DP department that offers you plenty of scope, variety and interest? A dynamic commercial organisation based in NW London are seeking an IBM System 38/RPG III programmer, with the potential to move into analysis. They have just recently installed the IBM System 38 and will shortly be embarking on exciting new development projects. Ref. G 2248

**IBM ANALYST/PROGRAMMER £10,000 + PERKS**  
A well-established financial concern have an urgent requirement for a competent analyst/programmer to take up a vital position within their DP department. You should have a minimum of 18 months' IBM COBOL or ASSEMBLER experience with exposure to either DL/I or CICS. If you have the ability to respond to a challenging environment and seek a rewarding career please ring for further details. Ref. G 2103

**COBOL CENTRAL LONDON £9,500-£10,500 neg.**  
Major electrical concern based in Central London wishes to meet competent analyst/programmers with Data General COBOL expertise. You will be working as part of a small team who are responsible for designing, developing, maintaining and implementing programs. You should have a positive attitude to work and the ability to work unsupervised. Ref. D 2324

**APPLICATIONS SUPPORT PROGRAMMER To £11,000**  
A well-established bureau based in the City has a requirement for an Applications Support Programmer, to support staff retaining a variety of projects. The ideal candidate should have an IBM ASSEMBLER background with DOS/VSE, some CICS would be helpful, although training given where necessary. The position offers good prospects with the possibility to go into systems programming at a later date. Please ring for more details. Ref. G 2349

**IBM COBOL BERKS To £9,000**  
Variety of interesting positions in the Berkshire area for programmers with at least 12 months' IBM COBOL experience gained within an MVS/DOS/VSE, or VM environment. Opportunity to gain on-line and database experience and further your career. Ref. C 4306

**HONEYWELL - COBOL To £10,500**  
This Berks-based manufacturing concern, housing both Honeywell level 66 and level 6, would like to meet programmers with a minimum of 12 months' relevant experience. Your involvement would be mainly in a development capacity, dealing with applications such as distribution and inventory control, payroll etc. This is an ideal opportunity for a young programmer to further his career and knowledge as many training courses are organised. Promotion prospects and remuneration is excellent. Ref. A 1709

**RPG II/III LONDON/HOME COUNTIES £7-£11,000**  
Superb opportunities have recently arisen for capable programmers and analyst/programmers within financial, manufacturing, insurance, commercial and software based environments. If you can offer at least 18 months' RPG II or III on IBM GSD kit, please give us a call for further information on the jobs and benefits available. Ref. GEN 42

**IBM COBOL WEST LONDON c£10,000**  
Existing position with the major world-wide company housing IBM 4341 with DOS/VSE, CICS and DL/I. They seek a capable programmer with 2 years' IBM COBOL and preferably some CICS and/or DL/I experience, although full training will be provided for an outstanding applicant. Plenty of development work in a friendly team environment. Ref. C 2342

**IBM COBOL £8,£9,£000**  
Are you a graduate? Do you have at least 12 months' IBM COBOL experience? If so, a major city Bank would like to hear from you. They have an IBM 4341 running under DOS/VSE with DL/I and CICS (training provided where necessary). Here is your chance to take up a position that can offer real career prospects, a realistic salary, and a full banking package. Ref. G 1857

**ANALYST/PROGRAMMER HERTS £9,000**  
An excellent opportunity exists with this Hertfordshire based company for an analyst/programmer with a sound IBM COBOL background in commercial applications. The company currently retain an IBM 4341 and 4341 under MVS and DOS/VSE with DL/I and CICS. The ideal candidate will be completely involved with the design and specification of programs. Good prospects are offered coupled with various company benefits. Ref. G 1826

**ICL SYSTEM 10/25 SURREY FIVE FIGURES!!**  
Can you offer 2 1/2 years' experience working with ICL System 10/25 equipment, are you capable of developing new systems, and working as an analyst/programmer? If so, then this major company involved in the home industry would like to hear from you. You will be working on a variety of interesting applications, from stock control to reservations systems. Excellent prospects including discount on holidays abroad! Ref. D 2231

**COBOL ESSEX £8,000 neg.**  
Expanding insurance concern situated in Essex are currently seeking to recruit a capable programmer with around 2 years' COBOL experience to join their busy development team that is about to embark on a major new project. You will be utilising their NCR kit, on which they offer full training. Conditions are excellent, including an excellent salary and various company benefits. Ref. D 2352

**DEC - BASIC KENT £9,000 neg.**  
International company housing DEC PDP and VAX equipment are currently seeking an analyst/programmer to help with the workload that major new systems has produced. You should have the capabilities to design and implement various packages, and the will to succeed. Excellent company benefits including subsidised restaurant and 5 weeks' holidays. Ref. C 2350

**IBM COBOL ESSEX To £10,000**  
A large financial institution in Essex is currently looking for well-motivated programmers with a minimum of 18 months' IBM COBOL and with the potential to move into analysis. You will be a vital member of a team, working on stimulating projects from start to finish. CICS exp. would be a great asset although, more important a good IBM background. The company offer excellent benefits and working conditions. Ref. G 2354

**RETRAIN - ANY COBOL! ENEG**  
Are you a graduate COBOL programmer with between 1-4 years' experience? Then my clients, a multi-national London-based concern have an exciting opportunity for you! They are currently seeking an ambitious and versatile individual to retrain on to UNIVAC 1100 kit, whilst working on varied and involving applications from sales to accounts. You will have ample opportunities to further your DP knowledge (operating systems, database, assembler) by attending both internal and external courses. Company benefits are excellent and the salary will more than compensate for your experience. Ref. A 2072

**SNR HONEYWELL - COBOL ENEG**  
Can you offer a minimum of 3 years' DP experience, which includes an in-depth knowledge of Honeywell mainframes from the programming and/or the analysis side? If so this central London-based commercial organisation, with branches throughout the country would be interested in you. They house Honeywell L64/UP52 kit utilising TDS and IDS III, and are currently developing new, interesting systems using 'State of the Art' technology. The company offer serious prospects for speedy advancement together with an excellent benefits package. Ref. A 2226

**ANALYST/PROGRAMMER N. LONDON/HERTS To £12,000**  
Interesting position with this financial company for an experienced analyst/programmer to work on both development and package tailoring support. You should have at least 3 years' RPG III or IV experience (some RPG III on IBM system 38 essential) 12 months' analysis, and be mature enough to liaise confidently with users at all levels. Any knowledge of financial or pension systems advantageous, as you will hold entire responsibility for this side of the business. Ref. C 2345

**ICL COBOL CITY To £10,000**  
Professional firm based in the City of London is currently offering the opportunity for an ambitious programmer to join their busy team working with absorbing systems. You should have a minimum of 2 years' ICL COBOL experience and a positive attitude towards work. If you are looking for a challenging job that can offer real career so prospects, call now for further details. Ref. D 2268

**HEWLETT PACKARD - COBOL To £10,500**  
An opportunity to join a highly reputable, international manufacturing organisation as part of its advanced and successful DP department. You must have a minimum of 12 months' HP 3000 experience, hopefully coupled with a knowledge of IMAGE, VIEW and QUERY. They seek people who are looking to advance their careers and offer the chance to work with exciting development projects in a high growth, high technology environment. The generous benefits package includes profit-share, bonuses, BUPA and relocation if required to their Berks based offices. Ref. A 1010



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Part Of A Technical Services Group Est 1969

## FOCUS-RAMIS-IMS-PL/1

## ANALYST/PROGRAMMERS

**Your skills in these areas are an immediate passport to the challenging software world of Tangent International in the USA - and for your family to enjoy the exciting lifestyles of Texas or Florida.**



Tangent means success in the software world. In just nine years, we have grown into a respected force in the international systems and software world. With offices and work locations around the globe, our contract support services are in tremendous demand by many major commercial organisations.

Against this background of success, we now wish to increase our technical strength by appointing experienced and dedicated professionals to work on the development of sophisticated on-line/database applications, on either a contract or permanent basis. Specifically we would like to meet Analyst/Programmers with sound knowledge in one of the following:

- FOCUS/RAMIS, and if you have a knowledge of SAS and/or FML, this would be an added advantage.
- IMS • PL/1 • MVS • TSO/SPF:

However, whatever your skills, if you have a minimum of 2 years' recent IBM experience, we'd like to hear from you.

Based in Florida and Texas, these assignments offer exciting opportunities to both broaden your experience and to enjoy the challenging rewards of the USA.

We offer an attractive package of benefits that includes:

- Excellent rates of pay
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- Assistance with accommodation

These positions, which are open for immediate start, are offered on single or married status, for an initial 6 month contract period, with an option to extend or join Tangent on a permanent basis.

To find out more telephone Phill Clark, NOW at Tangent Computer Services Ltd., 102/106 South Street, Romford, Essex RM1 1RX. Tel: Romford (0708) 750201 (24-hour answering service).

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# Systems Analyst c. £10,000 pa.

The project you start  
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You'll be working in a small team environment with all the advantages that brings. And all the responsibilities. The company is currently replacing its existing hardware with a Honeywell DPS 7/35 and they'll be looking to you to transfer the existing systems onto it. This will not only involve writing the program specs and testing and implementing the new systems but continuing liaison with a number of end-users. That pretty much puts you in the hot seat but if you're looking for total project involvement that shouldn't be a problem.

Your experience will have been gained, either with a Local Authority

or in the commercial sector and a knowledge of GCOS and/or COBOL would be a distinct advantage. Our client is based on the Surrey/Hants border and will cover relocation costs if you have to move.

Salary package includes Family BUPA, Contributory Pension Scheme and Bonus Scheme (after qualifying period).

If you're currently a small fish in a big pool perhaps it's time you tried it the other way around.

For an application form please phone George Shaw 01-549 9236 24 hr answering service.

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### UNIVERSITY OF HONG KONG LECTURESHIP IN COMPUTER STUDIES (The advertisement)

Applications are invited for the post of Lecturer in Computer Studies. Candidates should have a higher degree in Computer Science or Information Systems, and a strong interest in both teaching and research. Preference will be given to applicants with experience in computer systems, operating systems, performance evaluation, and systems analysis and design. Subject to regulations approved by the Council, lecturers may engage in a limited amount of outside practice. Annual salary (including pension) is an 11 point scale: HK\$28,640-217,320 (CI = HK\$10,000 approx.). Starting salary will depend on qualifications and experience. At current rates, salaries will not exceed 15% of gross income. Housing and medical benefits are provided. Further particulars and application forms may be obtained from: The Association of Commonwealth Universities (A.C.U.), 38 Gordon Square, London WC1H 0PF, or from: The Appointment Unit, Secretary's Office, University of Hong Kong, Hong Kong. The closing date for applications is 31st May 1983.

### SYSTEMS ANALYST/PROGRAMMER

#### COMMERCIAL SYSTEMS PROJECT DESIGN AND DEVELOPMENT IN DUBAI, U.A.E.

One of the largest and most successful trading groups in the United Arab Emirates is looking for an experienced Systems Analyst whose main tasks will be:

- 1) Modify existing accounting procedures and reports for smooth computerisation process.
- 2) To communicate with clients and suppliers on one side and Company Management on the other.
- 3) Helping systems design, development and implementation.
- 4) Helping trading company personnel to appreciate computer usage and benefits.

This is a Key Job carrying considerable responsibility for System Development and Project Leadership. Ideally a degree + four years' minimum experience in Programming, Systems Analysis and Data Processing within a commercial environment and good communication ability, would be needed. Arabic knowledge is essential.

Also needed two Programmer/Analysts with three years' minimum experience for the same project. Arabic knowledge is not essential. Salary will be negotiable depending on experience and background and will include accommodation and a car.

Please contact or send full C.V. for the attention of:  
Miss J. Slater  
STEMMOS LTD.  
344 Kensington High Street W14

## DCX NETWORK CONTROLLER

C. LONDON £10,000+

Due to continued expansion, an excellent opportunity has arisen for a highly-motivated individual to join a prestigious financial organisation utilising DEC & IBM equipment.

Applicants should possess sound Data Communications experience and an in-depth knowledge of DCX; exposure to PDP/VAX hardware is desirable though not essential.

The successful candidate will assume an important role within a small professional team responsible for the support of an extensive European Network.

In return for a high degree of commitment, you can be assured of a challenging long-term career path, a competitive salary and a superior range of benefits including subsidised MORTGAGE, annual BONUS and non-contributory pension.

Telephone NOW for further details or send your CV to the address below, quoting ref: J1802.

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Tel: 01-636 7584 (24-hrs)

## Software Engineers

Somerset and Gwent up to £14k

Plessey Marine — an independent business within Plessey Electronic Systems Limited — is the main contractor to the Ministry of Defence. Its Research Unit at Templecombe in Somerset and its Engineering Department at Newport in Gwent are looking for the following high calibre, degree-qualified people — preferably in electronics or computer science with at least 3 years practical experience using CORAL 88. Opportunities exist at all levels of experience and aptitude.

Systems Analysts to lay down the framework of a multi-processor design from customer requirements, end to communicate and control these designs during implementation.

Software Systems Designers able to develop the detailed software design concepts and lead technically a team of implementation programmers.

Programmers wishing to develop their existing programming abilities and level of design responsibility.

Software is developed using a Host-Target approach. The host computers are DEC PDP11 and VAX machines, supporting INTEL 8086 and TI 9900 microprocessors. Languages used are CORAL 88, PASCAL and ASSEMBLER, which are normally used in conjunction with a highly developed MASCOT design and implementation methodology.

First-rate working benefits include innovative training programmes and the job security of joining a successful company. A generous relocation package will be offered where applicable.

Please ring Peter Whitfield, Technical Resourcing Manager on Templecombe (0983) 70551 for an application form, or send a full c.v. to him at Plessey Marine Research Unit, Wilkintrop House, Templecombe, Somerset BA8 0DH for vacancies at Somerset. Or ring Merjory Barnes, Personnel Officer on Newport (0833) 270110 for an application form, or send a full c.v. to her at Plessey Marine Limited, Spytty Road, Newport, Gwent for vacancies at Gwent. Please quote reference TEM/284.

**PLESSEY**  
electronic systems

## Bleasdale Computer Systems Ltd SYSTEMS ENGINEERS

(£8,000 to £10,000)

who are enthusiastic, probably educated to graduate level (or equivalent), and experienced in one of the following:

- Operating system design • Unix and C programming
- Disk and tape controllers
- Communication protocols and networking

Exciting opportunities now exist to join the design and development team of an expanding Unix computer manufacturer.

Please apply with a full C.V. to:

Bleasdale Computer Systems Ltd.  
Francie House, Francie Street, London SW1P 1DE. Telephone: 01-226 8861.

## Computer Services Manager

c£12,000 + benefits

Hampshire Coast

This well established enterprising Company is a world leader in the manufacture of high quality hardware products for the yachting industry.

A practical Computer Services Manager is now required to take responsibility for the proper functioning of the ICL 25 and ICL 1500 systems in the UK and subsidiaries.

Candidates aged 25-35 should be capable of programming in system 25 Assembler and must have a very good understanding of production control systems as well as commercial systems.

The work is varied and interesting and this could well be an excellent career move for the right person.

Suitably experienced candidates should write with full career history to: Pat Yates, PER, 83-84 High Street, Southampton, Hants, SO9 2EG, or phone 0703-38311.

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## Computer careers

Potters Bar

STC Distributors is a leading electrical wholesale company with branches throughout the UK. We are currently embarking on a second phase of our computerisation plan using hardware which consists of twin IBM 4331's, shortly to be upgraded to 4381's running both batch and on-line systems. Our development programme requires the recruitment of the following:

### Analyst Programmers

If you have at least 2 years IBM DOS COBOL experience, preferably utilising SHADOW or CICS, and wish to work with a small yet fast moving team, then your next career discussion should be with us.

### Computer Operators

We wish to talk with Operators who have at least one year's IBM DOS/VSE experience — preferably on a 4300 series mainframe.

### Trainee Computer Operators

You don't need previous computer operating experience as we will provide full training. If you have a minimum of 5 GCSE 'O' levels, including Maths and English, then contact us now to arrange an interview.

Operators and Trainee Operators work on a two shift system, alternating weekly.

Salary, training and career prospects are at a level you would expect from a large and prestigious British Company. To find out more, telephone Tony Roth or Dave Tanner on Potters Bar 51177, or write to:

General Manager — Personnel, STC Distributors Limited,  
PO Box 28, Star House, POTTERS BAR, Herts EN6 2NS (2230)

**STC Distributors Limited** **STC**

## LONDON BOROUGH OF EALING Finance Department SENIOR COMPUTER AUDITOR

£9,255-£9,828 p.a.

Ealing is a member of a Joint Computer Consortium, which operates a large IBM Mainframe, services approximately 200 companies, and is rapidly developing personnel computing applications using APL. Due to the promotion of the previous holder, Ealing now seeks applications for the post of Computer Auditor. The responsibilities of the post include reviewing and testing computerised systems (Mainframe, Mini and Micro), developing audit software and interrogation facilities, carrying out computer centre audits and providing technical advice and assistance to other audit staff.

Applicants should have experience in data processing or computer auditing.

Please quote reference: 034/F. Closing date: 28.4.83.

Application forms from Personnel Office, Room A202, Town Hall Annex, New Broadway, Ealing, London W5. Telephone: 01-840 2424 extension 3358. Out of hours service on 01-840 1895.

## WEST YORKSHIRE METROPOLITAN COUNCIL

An equal opportunities employer

### ASSISTANT PROGRAMMER/ANALYSTS

Post Ref ES 10 001/2

£5,973-£10,071

Two science or engineering graduates are required to support the computer group's aims of providing cost-effective processing and two DEC VAX 11/780 computers and an IBM 3031.

A thorough knowledge of Fortran is essential and experience of computer graphics, interactive programming, and software evolution would be invaluable.

Mr. D. Quest will answer queries on Wakefield 387111 ext. 3518.

Application forms and further details from Directorate of Traffic, Highways and Engineering, Room 238, County Hall, Wakefield WF1 2QW.

Closing date: April 28th, 1983.

## GATEWAY BUILDING SOCIETY OPERATIONS SUPPORT TECHNICIAN

circa £9,750

The Society operates a dual-processor configuration supporting a comprehensive terminal network. All the Society's 138 branches are on-line to an IBM mainframe, using IBM 3080 terminal equipment.

An opportunity now exists for a suitably qualified person to be appointed as an Operations Support Technician to report to the Computer Operations Manager. The principal responsibilities will be the maintenance and security of operational libraries and job control. This is a new appointment which will enable the successful applicant to have considerable influence over the procedures and methods of operation that must be established.

Applicants must have two to three years' experience of operating IBM mainframes in a VME/OS environment and a working knowledge of DOS/VSE job control is desirable. A competitive salary and benefits package is offered, including professional mortgage terms.

The Society's modern Admin. Centre is located in Worthing and offers excellent working conditions and amenities, including swimming, squash and tennis.

Please send personal and career details, in confidence, to The Personnel Manager, Gateway Building Society, Gateway House, Durrington Lane, Worthing, West Sussex BN13 2QO.

Applications should be received not later than 25th April 1983.

## Creative Software Engineers Advanced computer imaging

Our client is a world leader in its market sector and has been responsible for many major technological breakthroughs. In order to maintain this technical impetus, the company is expanding and moving to a new purpose-built headquarters in Hertfordshire.

The company produces a range of state-of-the-art products for specific commercial markets, and as such, is helping low technology industries to use modern technology to improve quality and profitability.

The Software Specialists currently being recruited will be providing the Software input to multi-disciplinary teams consisting of electronics, optics and precision mechanical engineering specialists. There is a strong element of starting a new development programme from scratch through to final test.

We would like to discuss these career

opportunities further with candidates educated to at least HNC in a numerate discipline. Candidates should also have experience of real-time microcomputer processing operating systems and multi-tasking. Experience of DEC PDP 11 would be a distinct advantage. The company currently uses IT 11, RSX-11 operating systems. High level languages such as PASCAL is an advantage with FORTRAN. Assembler would be desirable.

As we are looking for high potential people, the figure salaries which are negotiable up to £11,000 pa (August review) and general conditions will be attractive to candidates of the right calibre. The company offers a substantial relocation package.

To take things further, either send us curriculum vitae or telephone for an application form quoting reference ES 55. These positions are open to both men and women.



## Cambridge Recruitment Consultants 1a Rose Crescent, Cambridge CB2 3LL. Telephone: 0223 311316.

### PIONEERS IN TECHNOLOGY

As leading based European distributors of a unique micro-based conversion system, we need energetic, responsible staff to expand our products and services in the UK and Europe.

### SYSTEMS ENGINEER/MANAGER

We are looking for an engineer experienced in micro-computer operating under CP/M to set up and run the installation and maintenance division of our company. Knowledge is essential in communications on computerised systems, portable word processors and photocopiers.

£10,000 plus company car.

### SALES MANAGER

We are looking for an experienced sales person able to set up a separate national sales division with our organisation. The position demands knowledge of computerised systems, preferably word processing and photocopiers. The job is challenging and demanding and the successful applicant will enjoy a substantial income package plus company car and other benefits.

Applications to be sent to Bon No. 1256, c/o Computer Weekly, etc. (2230)

## Senior Technical Support Engineer

If you have a thorough working knowledge of the IBM OS operating system and are familiar with the following Computer Associates International Inc. products (Ex-Capex Corporation):

CA — Scheduler, CA — TLMS/II, CA — Manage DASD, CA — EZTEST and CA — JOBDOS — then we would like to hear from you.

We are offering £15,000 basic + commission, car, BUPA for you and your family and excellent promotional opportunities in a company expanding at a rate of 30/40% per annum.

Send full CV and supporting letter to: Messrs Kely, PER, Sun Alliance House, 40 Oxford Road, Reading, Berkshire. Quote Ref 180.

**PER** Confidential Reply

## COMPUTER AUDIT

£7,791-£9,231 p.a.

An opportunity exists in the Borough Treasurer's department for a Senior Auditor to play a leading role in developing Computer Audit techniques, all major financial systems are computerised with increasing use of on-line facilities and further substantial computer developments are planned after the council's existing computer is replaced later this year.

The successful applicant will have either a financial or computer background, and the appropriate qualifications would be an advantage although Specialist training will be provided. Enthusiasm and the ability to communicate effectively at all levels are essential.

The post holder will also be required to become involved in other aspects of a progressive and very active audit section. Excellent conditions of service include flexible working hours, staff canteen and bar, full removal expenses and other relevant expenses in line with the council's scheme.

Application forms and job descriptions available from: The Personnel Officer, Council Office, Farnborough Road, Farnborough, Hants (0252 516222 Ext. 211). To be returned by 27th April, 1983.

For an informal discussion about this post telephone the Chief Internal Auditor, Ext. 240.

**Borough of RUSHMOOR**

## SOFTWARE ENGINEERS

For a number of years now Interlex has been specialising in the recruitment of personnel for companies who design, develop or use computer based interactive systems in the following areas:—

- Artificial Intelligence
- Networking and Workstation Design
- Defence Systems
- Process Control and Automation
- Image Processing

If you are looking for a new appointment within these areas, then discuss your requirements with Penny Werburg or Clare Newton, our senior consultants on 01-943 0968. Salaries range from £7K to £18K.

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HIGH TECHNOLOGY PERSONNEL

## Creative Assembler Programmers Central London

Why not use your assembler programming experience and creative flair in one of the fastest growing areas of computer software development.

The home computer software division of THORN EMI VIDEO LIMITED is undergoing a planned expansion over the coming months, and is now looking for additional programmers.

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Previous assembler programming experience is required, and ideally some knowledge of video games, together with a genuine interest in this field. Any experience of computer graphics on micros would be an added advantage.

Opportunities for advancement are excellent and we offer the usual range of large company benefits, plus an attractive salary and performance-related incentives.

For further details and an appointment please telephone or write to: Richard Gibson-Robinson, Software Development Manager.

**THORN EMI  
Video Limited**

5th Floor, Film House, 142 Wardour Street, London W1V 4PT.  
Tel: 01-437 4393.

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# HOWARD

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VAX, PL/I Programmers  
minimum four years' experience  
VAX, PL/I Programmers  
relational data base experience  
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relational data base experience

Please contact in the first instance, Sally Lawrence, on 01-952 8092 (office hrs) or on 01-906 2617, between 6-8pm.  
Employment/business section

Howard Organisation International Limited, Russell House, 140 High Street, Edgware, Middlesex HA8 7BS.

(3284)

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## LECTURER IN COMPUTER STUDIES

£7,785-£10,088  
(110-00-0150-0000)

Required to teach Computer Studies to students on the SNC in computer data processing. Professional qualification and previous experience of high level languages (particularly COBOL) essential.

Removal expenses and assistance with housing where possible.

Application forms available from the Personnel and Management Services Office, Council Office, Sandwick Road, Stromness, Orkney, Shetland Islands, ZE1 7JZ, 355. Closing date: Friday, April 29, 1983.

(3277)

## DATA TYPE LIMITED

We wish to recruit for our South-East sales office in Wembley, the following personnel:

### BRANCH SALES MANAGER

To control a sales force of terminal and system salesmen and be capable of generating major account customers for our new range of graphics terminals manufactured in South Wales. The ideal candidate would have a graphics background and some management experience.

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Applications to: Valerie Brown, Personnel Office, Data Type Limited, Llantarnam House, Llantarnam Industrial Park, Cwmbran, Gwent NP44 3YP. Tel: 08333 89162.

(3273)



### Senior Analyst/ Programmer (User Services)

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Salary Scale: SO2-PO1a (34-38)  
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Further particulars and application form from: Establishment Clerk, The Polytechnic, Wolverhampton, WV1 1SB

(3168)

### UNIVERSITY OF OXFORD

#### UNIVERSITY LECTURESHIPS IN COMPUTATION

Applications are invited for four University Lectureships in Computation, available from 1st October 1983. These appointments will be made under the University Grants Committee scheme for financing a number of additional Information Technology posts in universities.

It is intended that these appointments should be held in conjunction with a college fellowship.

Further particulars of the university lectureships, and of relevant college posts, may be obtained from Professor G. A. R. Hirst, F.R.S., Oxford University Computing Laboratory, Programming Research Group, 4-11 Keble Road, Oxford OX1 3DD. Telephone Oxford (0800) 84141, to which applications (in typed copies, or on form overseas applicants) should be sent. (Separate application is not necessary for an excellent college post). The closing date for the receipt of applications is 11th May 1983.

(3227)

### THE KELVIN LABORATORY

#### UNIVERSITY OF GLASGOW

#### COMPUTER SYSTEMS ENGINEER

The Laboratory has a vacancy for a person to work with the nuclear physics research group at the Laboratory in the preparation of an on-line data collection system for use both in the Laboratory and for experiments carried out at foreign laboratories. The work is varied and interesting, involving both hardware design and programming of the on-line computers, which at present comprise several DEC 11-23 systems. It will also be necessary for the person appointed to become familiar with the VAX 11-780 in the laboratory. Experience of one or more of these systems would, of course, be an advantage but applications will be welcome from candidates without such experience but demonstrating ability and willingness to learn.

Salary will be on either Range 1A (£8,375-£9,940), or Range 1B (£9,550-£10,988) on the scales for Research and Academic staff, depending on age, qualifications and experience. Superannuation under the USS Scheme is also provided. The post is funded by the SERC on a rolling grant.

Applications, detailing qualifications and experience (three references should be sent to Professor J. M. Reid, The Kelvin Laboratory, Department of Nuclear Physics, University of Glasgow, Glasgow G12 8QQ, by 30th April 1983 to whom further enquiries should be addressed. In reply please quote Ref. No. 4862P.

(3244)

### SOUTH COAST

If you'd like to know what vacancies are currently available in Southern Counties and West Country ring

Jeff Minard  
Managing Director  
CBS APPOINTMENTS  
1 Wotton Gardens  
Bournemouth (0202) 282181 (Office)  
or 0202 854881 (Eve & Wendy)  
Any. (2498)

### UNIVERSITY OF SOUTHAMPTON

#### UNIVERSITY LIBRARY

A vacancy exists for a

#### Programmer

to join the Library Automation Group responsible for designing, programming, implementing and maintaining computer-based systems used in the Library. A CIL 8045, with 300 Mb of disc space, and remote terminals which include memory value and tape data collection units, was installed in 1982. The Group is directed by a systems analyst and includes a series of programmers.

Applicants should possess a degree or equivalent qualification. A sound knowledge of COBOL or CORAL is required and experience with text manipulation rather than mathematical processes would be an advantage.

The appointment is for two years on the University salary scale £3650 per annum.

Applications in capital giving details of age, qualifications and experience together with the names and addresses of two referees should be sent as soon as possible to Mrs. C. P. Sears, Staffing Department, University of Southampton, Highfield, Southampton, SO9 5NH, quoting reference 102/1P.

(3177)

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OR A KNOWLEDGE OF

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UNIX

VNOS

DATAMANAGEMENT

OR SOME EXPERIENCE OF

PLM, SPL, PL/1 (AND FOR ONE CONTRACT) COBOL

COMPILERS

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(3147)

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**SALES EXECUTIVE** c £20K + Car + Benefits

Requiring a highly successful track record with one of the major small business system manufacturers or dealers, your sales experience must be augmented by a fair understanding of accounting systems, stock control or similar applications. The role will involve the sourcing, selection and account management of regional distributors and software/systems houses throughout the UK. A sound knowledge of at least one vertical market would be advantageous.

**SOFTWARE SUPPORT** c £15K + Car + Benefits

With at least five years experience in the computer industry, your experience must cover operating systems (Unix preferred) and applications software. You will use this expertise fully in liaising with software houses and customers for the provision of a high level of pre-sales technical support. Experience of training sales engineers would be useful.

For full details of this exciting new venture please telephone Ken Alwright on Maidenhead (0628) 74274 or write in confidence to Charvil Lewis International, 27 Marlow Road, Maidenhead, Berkshire.

## Charvil Lewis INTERNATIONAL

### UNIVERSITY OF WARWICK LECTURESHIP IN INFORMATION SYSTEMS/BUSINESS COMPUTERS

Applications are invited for a post of Lecturer in Information Systems/Business Computers in the School of Industrial and Business Studies.

The successful candidate will teach on undergraduate and post-graduate courses, designed for future managers and staff advisers so as to enable them to understand and benefit from modern computer developments relating to information and decision support systems. Candidates should have research obtaining effective use of computers within organisations. Initial salary up to £25,810 p.a. on the Lecturer scale; £26,376-£33,506 p.a.

Application forms and further particulars may be obtained from the Academic Registrar, University of Warwick, Coventry CV4 7AL quoting Ref. No. 36/A/2/83. Closing date for receipt of applications is 28th April 1983.

### UNIVERSITY OF ESSEX Department of Electrical Engineering Sciences Lecturer in Software Validation/Specification related to Real-Time Systems

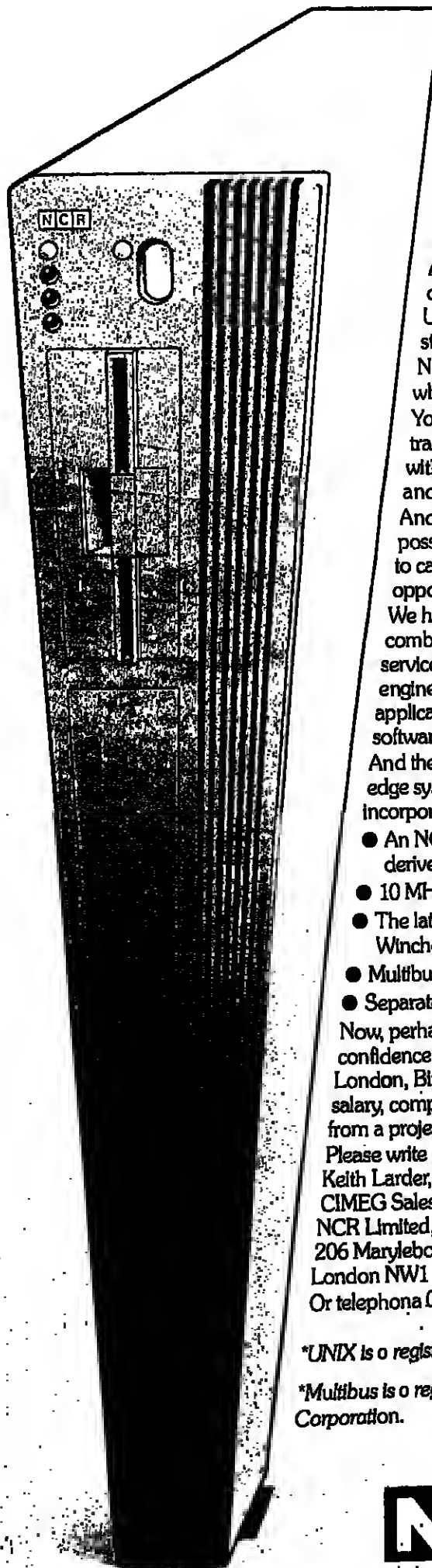
Applications are invited for the above post (Salary scale £8,375-£13,865, for appointments from 1 October 1983) to support teaching in the MSc course in Real-time Systems. This course which runs alongside other graduate courses in the Department of Electrical Engineering Sciences, has recently been recognised by the SERC for Information Technology conversion.

Candidates should have an Honours degree and experience (especially gained in industry) of software validation and specification related to distributed systems and protocols. The person appointed will be expected to contribute to the graduate Real-time course and to the undergraduate teaching, and will also participate in research in the distributed systems area. Both teaching and research in the Department are extensively supported by British Telecom.

Further particulars may be obtained from the Registrar, Prof. A.G. B. C. W. University of Essex, Wivenhoe Park, Colchester CO4 3SQ to whom applications should be sent, enclosing a curriculum vitae and the names and addresses of three referees, should be submitted by 6 May 1983.

(3156)

# The Tower- a small miracle with a big sales future- make it yours



NCR are about to launch a revolutionary new mini. The Tower 1632.

It's a 16 bit machine incorporating the latest advances in processor and peripheral technology.

And the NCR enhanced operating system is derived from UNIX\* - the emerging world standard for 16 bit machines.

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Keith Larder,  
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Or telephone 01-388 8159 for an application form.

\*UNIX is a registered trademark of Bell Laboratories.

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## SALES BIT

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# Establish good relations

WHATEVER your feelings about recruitment agencies, it is very difficult to avoid using them if you are to solve your recruitment problems within an environment that has as many as 10 jobs chasing every competent salesman.

When using an agency tell them absolutely everything about the job, the company, the product, the people and the market. To hide facts about problems or opportunities, be they in the present or future, is likely to cause the agency to undersell or oversell the job.

If a new recruit does not know all about the nasties before he joins, sure as hell he will afterwards. This is just as likely to result in his departure at a later date causing more waste and expense on everyone's part.

One hallmark of a good agency is a reluctance or refusal to work with you unless they have the complete truth about all aspects of the assignment.

The fees may frighten you. From 15-25% of the first year minimum salary can be expected. However, this must be seen in the light of the cost of having a vacant

territory: i.e. the profit that should have been made from the territory concerned.

The agency can do no more than identify salespeople they believe to be able to fill the job, given the right circumstances. The candidate may be particularly suitable in some way but unsuitable in others, but given the right support, like training and time, can make it.

Putting forward ideal candidates is easy and a great joy to any recruitment consultant; obviously everybody wants them.

It takes all of five nanoseconds to get them into gainful employment. The only problem is, such people are not common and, not typically hanging around agency files.

The recession has flushed out many passengers and non-performers. Some inevitably end up on agency files particularly within generalised agencies without the specialist experience to identify them. There are also many candidates without appropriate skills and experience trying to get into computers; while such applicants emanate from the

national Press advertising, some get on to agency files.

This could be a source of good people, but is best avoided if the potential employer has no training facilities or commitment to develop new recruits. Having said that, good candidates with justifiable reasons for changing employment regularly approach recruitment consultants in order to find a new job.

It is therefore important to establish a good relationship with such specialists.

This leads to a better understanding on the part of the consultancy about the company, its products, style, type of salesman, etc. that is likely to fit the company mould.

## PUZZLE ANSWER

BRIEF mental examination of the serial 1491625 gives the vital clue - i.e. that the "difference" increases by two each time. So the next highest square after 219024 must be 219961 (219024 plus the difference between the two original squares given - 935 - plus 2).

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